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THE SUPPLEMENT
TO THE
UNITED STATES NAVAL MEDICAL BULLETIN

PUBLISHED FOR THE INFORMATION OF

THE HOSPITAL CORPS
OF THE NAVY

ISSUED BY

THE BUREAU OF MEDICINE AND SURGERY
NAVY DEPARTMENT
DIVISION OF PUBLICATIONS
CAPTAIN J. S. TAYLOR, MED. CORPS, UNITED STATES NAVY
IN CHARGE

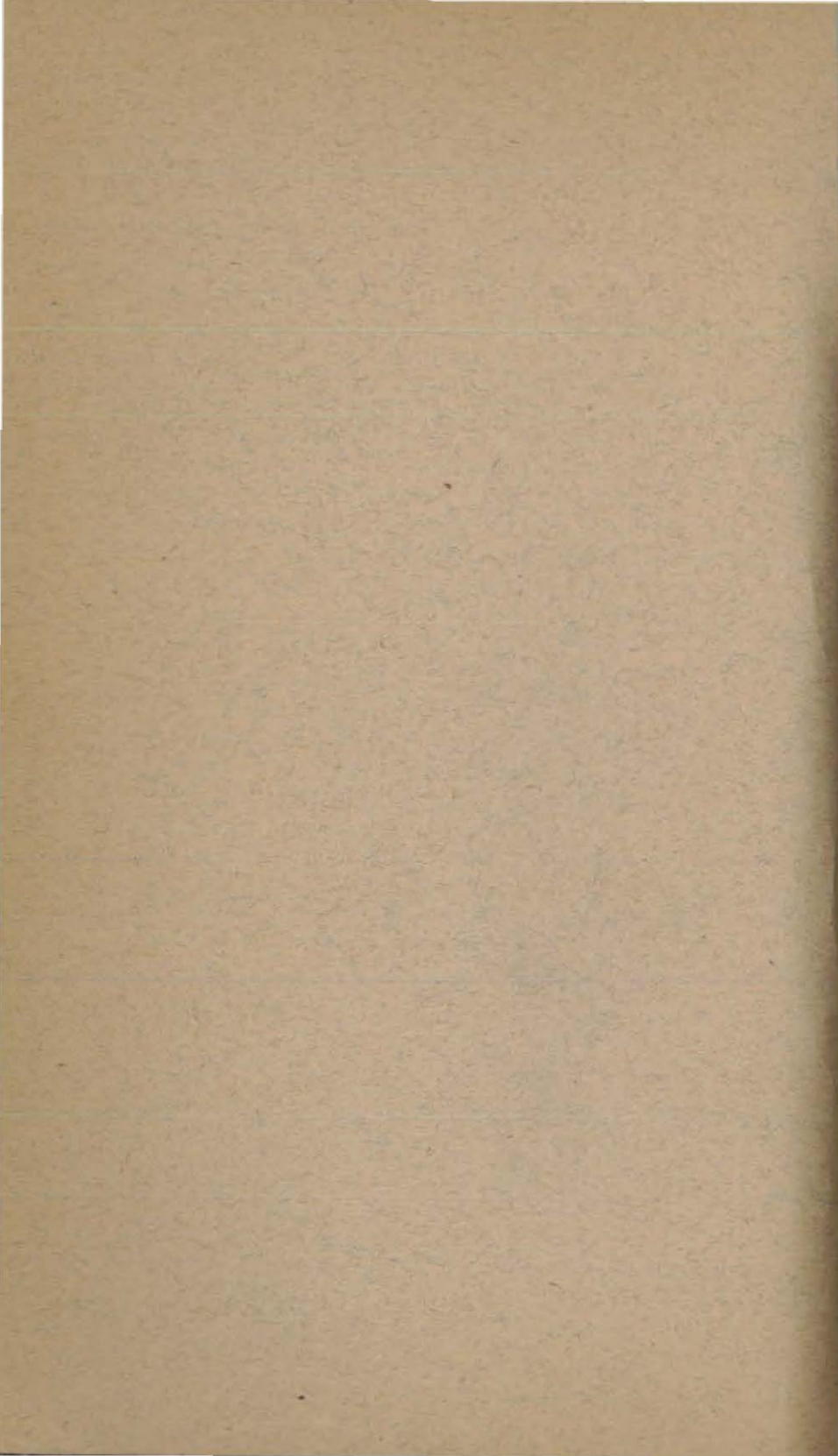
EDITED BY

LIEUTENANT COMMANDER G. F. COTTLE, MED. CORPS
UNITED STATES NAVY

JANUARY, 1919
(NUMBER 8)



WASHINGTON
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NAVY DEPARTMENT,
Washington, March 20, 1907.

This United States Naval Medical Bulletin is published by direction of the department for the timely information of the Medical and Hospital Corps of the Navy.

TRUMAN H. NEWBERRY,
Acting Secretary.

(2)



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PREFACE.

From the first issue of the United States Naval Medical Bulletin it has been intended as a vehicle of communication with the Hospital Corps, and to be the means of imparting information and instruction to it as well as to the Medical Corps of the Navy. The recent expansion and improvement of the Hospital Corps seems now to justify more direct methods and the material prepared for that body will hereafter be issued in the form of a SUPPLEMENT.¹

Contributions for the SUPPLEMENT are desired from members of the Hospital Corps and from other sources, but the Bureau does not necessarily undertake to indorse all views and opinions expressed in these pages.

W. C. BRAISTED,
Surgeon General United States Navy.

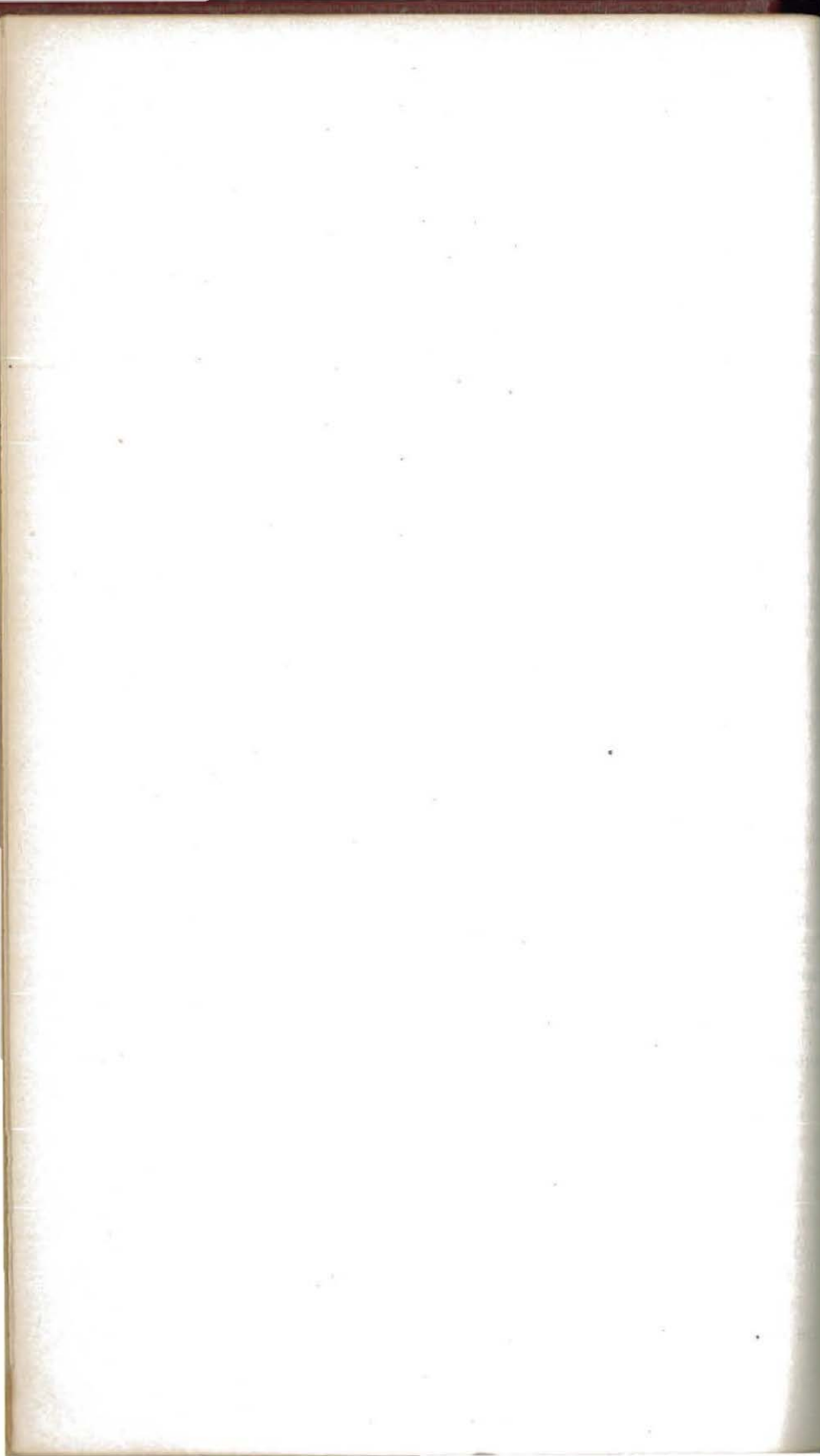
ERRATA.

The following corrections should be made in the October (Number 7) issue of the SUPPLEMENT:

Page 12, paragraph 4; change *upper* to *lower* in the sentence "The upper teeth receive their supply," etc.

Page 13-3. Legends for the lower illustrations are transposed. The picture on the left shows a molar, that on the right a bicuspid tooth.

¹ The present issue is No. 8. Nos. 1 and 2 appeared incorporated in the July and October issues, 1917, respectively, of the United States Naval Medical Bulletin.



THE CARE OF CONTAGIOUS DISEASES.

By W. C. NEWTON, Lieutenant Commander, Med. Corps, U. S. N. R. F.

The spread of contagious disease easily controlled.—When a man is called to assume duty in the contagious wards of a hospital and is unfamiliar with the method of spread of the various contagious diseases and their prevention he usually has a mental picture of a prolonged struggle in trying to master the intricacies of a complicated technique. He is also somewhat apprehensive that he, too, may fall a victim to infection. Nothing could be further from the truth.

Since it became known a few years ago that the infectious agent of communicable disease is not carried to any great distance through the air, and that the only danger of contracting these diseases is by coming in very close or actual contact with the patient or infected articles, it has become a comparatively simple matter to control contagious disease.

Surgical and contagious technique compared.—To all who have learned surgical technique it is clear that we protect the patient from all objects that are not surgically clean; that is, everything that may come in direct or indirect contact with the wound is absolutely sterilized.

Now, if we reverse the process in the care of contagious disease and carefully cleanse our hands and sterilize everything which leaves the unclean patient, we can neither contract the disease ourselves nor transmit it to others.

Definition of "The Unit System."—At present the plan of treating a case or group of cases is called "The Unit System."

A unit consists of a patient or group of patients ill with the same contagious disease, together with the room or ward in which they are confined, the beds, furniture, all utensils, and attendants.

Object of the technique.—The chief object of the whole technique is to prevent the spread of infection from one unit to another or to the attendants attached thereto.

Cleanliness most efficient means of disinfection.—A few years ago much dependence was placed upon the use of many and various liquid and gaseous disinfectants for ridding infected premises of contagious and poisonous material, but experience has taught us that the liberal use of soap and water, together with plenty of sunshine and fresh air, is practically all that is necessary in ward or room disinfection.

Infective agents, where found.—The infective agents of most of the communicable diseases are found in the secretions of the nose

and throat. Not all these poisons are germs which we can see and identify with the microscope, but we do know how they operate and how to get rid of them and protect ourselves from them. So it can be readily seen that all discharges from the nose and throat must be carefully disinfected as soon as possible, and every precaution must be used in handling them.

Precautions for attendants.—It is obvious, then, that attendants should never allow a patient to cough or sneeze near the face, as the infection may be carried in the fine droplets of the saliva some distance, especially in a draft or current of air.

It is the custom at the United States Naval Hospital, New London, Conn., to require the hospital corpsman to wear for self-protection, while working about a patient, a face mask, or strip of gauze, tied over the mouth and nose. The face mask is preferred and is easily made in any hospital. It consists of a face piece of wire-mesh gauze covered with several layers of ordinary cotton gauze, with tapes which tie at the back of the head. It is clean, comfortable, and more economical than gauze strips. The use of the mask is unnecessary when performing duties not in close proximity to the sick.

In addition to protection afforded the wearer the mask prevents the attendant from becoming a "carrier."

Definition of a "carrier."—A "carrier" is one who may harbor the infecting organism in his own throat, and while he may be immune and remain perfectly well himself, he may yet transmit the disease to nonimmunes and become a menace to his associates.

Conduct of a hospital corpsman when reporting for duty.—When a hospital corpsman reports for duty at the contagious department, he goes to a dressing room where he changes his uniform to one that is kept there. This uniform does not vary from the uniform used in general ward work. He then goes to the unit to which he is assigned, and is ready for work.

Conduct of hospital corpsman when on duty.—As soon as he reaches the unit, he puts on a gown which is kept hanging on a convenient hook, and folded in such a way as to keep the clean side inside, and by sliding the arms into the sleeves, the inner side of the gown does not become contaminated, and infection of the uniform is prevented. He then puts on a mask, if he is to work about the patient.

It is necessary to keep the gown free from contamination, so as not to infect the uniform worn underneath, and thereby carry infection to the dressing room.

Disposal of remnants of food; care of mess gear.—Remnants of food must be incinerated and all mess gear sterilized by boiling before being washed.

The tray of soiled mess gear is carried to the diet kitchen and placed, tray and all, in boiling water. The hospital corpsman must carry out the technique when going from his unit to the diet kitchen, just as he does when about to go off duty, or leave the unit for any other purpose. It is perhaps unnecessary to add that he does not change his uniform under these circumstances; but only when he leaves the contagious department.

Conduct of hospital corpsman when going off duty.—The most important part of the technique is carried out when the attendant leaves the unit, or goes off duty. He must remember that his hands are contaminated, and to avoid the contamination of the gown, the hands and arms are carefully scrubbed with brush, soap, and water, for a minute; then he removes the gown, hanging it on a hook, keeping the clean side inside; he then scrubs hands and arms under running water for *three minutes*, after which he goes to the dressing room, changes his uniform, and goes off duty.

Technique on admission of a patient.—On admission, the patient's clothing must be collected in a clean sheet, sterilized in a steam or formaldehyde gas disinfectant and afterwards anything that is washable is sent to the laundry. It is desirable to sterilize by steam all articles that will not be destroyed by moist heat. Felt, rubber goods, etc., should be disinfected by formaldehyde gas. Clothing is then tagged, neatly bundled, and sent to the bagroom.

Care and disinfection of utensils.—Bedpans, urinals, or other infected utensils, should be immediately emptied into the sink set aside for this purpose; then they are to be thoroughly cleansed with soap and hot water, and are to be returned at once to their respective unit. Utensils that are to be transferred from one unit to another must be thoroughly disinfected with a 5 per cent solution of carbolic acid, in which they are allowed to soak one hour. In dusting about the unit, a *damp* cloth should be used.

Technique on discharge of patient.—On discharge, the patient is taken to the bathroom, wrapped in clean sheet, a clean sheet is spread upon the floor beside the tub, and such clothing as he may have on is dropped onto this sheet, which, with its contents, is sent to the sterilizer. He is then given a thorough bath of soap and water, the hair is shampooed and wet with 65 per cent alcohol; he then receives his clothing and is released from quarantine.

Disinfection of premises after discharge of patients.—After the patient is discharged the cleaning and disinfection of the unit is carried out as follows: The walls within easy reach, the bed, chair, and table are washed with soap and water, and the enameled parts are wiped with a cloth, dampened with a 1-500 bichloride of mercury solution. Mattresses and blankets, as well as the bed linen, should

be sent to the sterilizer. Games, books, and writing material should be burned.

Segregation of convalescent patients.—It will be found convenient to have the patients, when convalescent, wear arm bands of distinctive colors when they are allowed outside the building for an airing. In this manner they are easily segregated and kept within restricted areas set aside for each class of cases.

Important reminder.—Remember that the secretions from the mouth, nose, and sometimes from the ears, are highly infective, and that the virus of measles is particularly tenacious, and it is necessary to scrub the hands, especially the palms and flexor surfaces of the fingers, with great vigor in order to thoroughly remove the poison.

The most important rule.—THE HOSPITAL CORPSMAN MUST NEVER LEAVE THE UNIT OR CONTAMINATED AREA TO WHICH HE IS ASSIGNED WITHOUT FIRST THOROUGHLY SCRUBBING HIS HANDS AND REMOVING HIS GOWN.

THE PREVENTION OF CROSS INFECTIONS IN THE HOSPITAL WARD OR SICK BAY.

By CARROLL FOX, Surgeon, U. S. Public Health Service.

The medical officer must necessarily depend largely upon the efficient cooperation of the hospital corpsmen to prevent the spread of disease and especially the occurrence of cross-infections in the hospital ward or sick bay. By taking the proper precautions it is quite possible to isolate several different communicable diseases in the same ward without disease spreading from one patient to another. The success to be attained under such conditions is dependent upon the efforts of the hospital corpsman, who must have knowledge of how disease is spread in order to apply preventive measures logically. The great majority of the communicable diseases are spread through contact with discharges from a patient or a carrier. From this standpoint diseases may be grouped as respiratory, intestinal, or venereal diseases, and as insect-borne diseases, depending upon whether the infective agent is passed out from the discharges from the respiratory passages, the intestinal tract, the genital organs, or is harbored only in the blood.

In the case of the intestinal diseases, as typhoid fever and dysentery, the method of conveyance from patient to victim might be summed up as feces, filthy fingers, flies, and food, the latter, of course, to include beverages. In the case of the respiratory diseases the discharges are conveyed from person to person by means of the spray forcibly projected from the mouth during the act of coughing and sneezing, or by the transference of fresh nose and mouth discharges from person to person through the medium of contaminated fingers, mess gear, drinking cups, food, and the like.



Contagious reception ward, Naval Training Station, San Francisco, Cal.



Measles isolation ward, Naval Training Station, San Francisco, Cal.



Bed screens at sick quarters, Naval Training Station, San Francisco, Cal.



A dental office, Naval Training Station, San Francisco, Cal.

In the group of insect-borne diseases are included yellow fever, malaria, trench fever, bubonic plague, and typhus fever. Patients suffering from such diseases must be freed of and screened against insects in the course of the disease. Flies should always be excluded from a hospital ward.

When several diseases of the respiratory type, such as measles, mumps, diphtheria, cerebro-spinal fever, and scarlet fever are being isolated it is necessary to separate patients to such a degree that spray projected from the mouth in coughing and sneezing will not reach the person in the next bed. As this is not always practicable in the sick bay for lack of room, it suffices to erect a cloth screen partition between the beds, thus making a barrier against droplets of material expelled from the throat and nose. The attendant upon the case must use great care that he does not convey fresh discharges from the mouth, throat, nose, intestines, etc., of one patient to the mouth of another by means of his soiled hands. This is obviated by washing the hands in a disinfectant solution after visiting each patient and by using great care not to handle anything until after the hands are washed; otherwise the moist secretions may be left on food, faucets, the rims of basins, dishes, aprons, and the like. It is a good practice to wear a gown while attending a patient having a communicable disease. The gown should be removed upon the completion of duty and before visiting other patients. Where several different communicable diseases are under treatment a special gown should be worn while caring for all cases of any one disease—that is to say, a special gown for scarlet fever, another for measles patients, etc.—so that the infected discharges of one disease, as scarlet fever, may not be conveyed to patients suffering from another disease, as measles.

The discharges from the intestines and bladder should be received in proper receptacles and immediately disinfected. The material from the throat and nose should be received on gauze, which should be immediately burned or placed in a disinfecting solution.

It is essential that all dishes or other utensils used by patients, as well as thermometers and the like, be sterilized.

The attendant upon a case of any of the diseases of the respiratory type should wear a gauze face mask, which may be removed when his duties are completed.

ARREST OF PAIN OR DISEASE DUE TO THE TEETH.

By Dr. J. M. WALLS, College of Dentistry, University of Minnesota.

Q. What characteristic features have the different tissues of the tooth and its supporting structures bearing on operative procedures?

A. The enamel which constitutes the outer portion of that part of the tooth extending above the gum is made up of rods set together with the outer ends forming the surface of the tooth. The inner ends

of the rods rest upon the dentine. The enamel has no blood and nerve supply. It is extremely hard, very brittle, and offers great resistance to wear and chemical reaction. It is composed almost wholly of inorganic material (lime salts). When the enamel is once broken the rods split apart readily where they are unsupported by dentine.

The dentine makes up the greater portion of the tooth structure and resembles ivory in nature. It is traversed by very fine canals which lead from the pulp to the periphery of the dentine. These canals contain in their inner ends extensions from the pulp called fibrillæ. No organic tissue is discernible in the outer ends, but sensation is conveyed supposedly by vibration of fluid content. The dentine is composed of inorganic matter about 70 parts and organic matter about 30 parts.

The pulp is highly vascular and well supplied with nerves.

The same blood vessels and nerves which give off branches to the pulp supply in part the peridental membrane, which forms the medium by which nourishment to the outer portion of the dentine is also furnished.

Q. What is the office of the dental pulp?

A. It develops the dentine in the formation of the tooth and remains, limited in size, to furnish nutrition and convey sensibility, a necessary protection to all tissue.

Diagnosis.

Q. How does irritation of the pulp make itself manifest?

A. The outward manifestation is revealed by pain. The pulp itself becomes inflamed or stimulated to develop more dentine, drawing back as dentine is developed for its further protection.

Q. What are the causes of irritation to the pulp causing toothache?

A. (a) Caries; a dissolution of the enamel and dentine in certain areas. (b) Exposure of the dentine through fracture or a wearing away (abrasion) of the tooth. (c) Exposure of the cementum occasioned by receding gums and alveolar process. (d) Inflammation of the pulp arising through disease of the peridental membrane or transmitted thermal changes, as from large metal fillings in the teeth.

Q. What other diseased conditions may cause pain called toothache?

A. Inflammation of the peridental membrane due to trauma, infection or inflammation arising in the pulp, or from external sources.

Q. What are the symptoms of trouble arising from caries?

A. Toothache starting usually in a mild form, intermittent in character and lasting as a rule but a short time with each occurrence. Extreme sensitiveness to cold or very hot foods and contact with sweet or starchy food.

Q. What are the symptoms of trouble arising from exposure of the dentine or cementum?

A. Sensitiveness to ices, cold air, acids, contact of exposed surfaces to hard substances, such as grinding hard foods, ferments from sugars or starches, friction caused by the tooth brush or pick.

The removal of the irritant in each instance overcomes the pain.

Q. What are the symptoms incident to an inflammation of the pulp?

A. The pulp may be either exposed to caries or not. Trouble often arises where teeth have been filled, the cavities having been large or very deep. It may also follow external infection or a traumatic injury to the tooth. From any of these the pain is likely to be intermittent and is usually intense in character, persisting for only a few minutes at a time, or it may extend over a period of hours. Extremes of temperature aggravate it, heat often being more noticeable than cold in the advanced stages, when cellular decomposition is taking place. Tests are usually made by applying ice to the teeth or a stream of water from a syringe, comparing its effect upon the suspected tooth and others that would appear to be normal.

A sharp jar, such as tapping on the tooth with an instrument, may reveal the affected tooth to be more sensitive than those next to it. The latter condition, however, will be noticed only when the inflammation has extended into the tissue about the root end.

Q. What are the symptoms arising from inflammation of the peridental membrane?

A. Pain starting very gradually and persisting without intermission, an apparent elongation of the tooth, soreness to pressure and particularly to a blow; occasionally a feeling of temporary relief upon slight pressure from the opposing teeth is evident.

If the inflammation becomes very intense as when a marked infection arises, a swelling may follow and the tooth become loose.

With the development of the pus the body temperature will usually rise and a feeling of general malady comes on accompanied with loss of appetite.

Q. What is a dental abscess?

A. An abscess is the development of pus within a circumscribed area beneath the surface due to the disintegration of living tissue as a result of inflammation and bacterial invasion.

Q. What is the cause of a dental abscess?

A. Infection within the pulp canal causing a lowered resistance of the tissue about the root and its inoculation by pus forming bacteria.

Diagnosis and treatment of toothache.

Q. How would you determine the cause of toothache?

A. By first inquiring of the patient as to the character of pain; if sharp and throbbing, having been of short duration with perhaps a previous similar condition, more or less intense, and often following

the taking into the mouth of cold, hot, sweet, or starchy food, the suggestion of a cavity due to caries would be indicated.

Q. What means of examination for caries would be followed?

A. By the use of a curved exploring point and a mouth mirror examining the teeth on the side of the mouth indicated. Large cavities usually may be discerned by direct vision or the changed color of the enamel, which reveals a whitish or yellowish tint over decayed areas.

Failing in this, the explorer should be passed over the surfaces of the teeth in such a manner that the point will drop into any opening it might reach. Care should be exercised to feel with the explorer point all proximal surfaces (surfaces of the teeth presenting toward other teeth) from the points of contact to the attachment of the gum. Examine the grooves and buccal and lingual surfaces of all molars carefully.

It sometimes occurs that pain seems to come from a lower tooth when the trouble actually arises from an upper tooth or vice versa.

Q. What would be suspected if no cavities were found?

A. That the pulp is inflamed in a tooth carrying a large filling or crown.

In this event a test by cold or heat will often reveal the sensitive tooth.

Q. What evidences would be manifest if the pulp were gangrenous or had been removed?

A. The patient would complain of pain starting gradually.

Q. What are the symptoms arising from inflammation of the peridental membrane?

A. The primary evidence displays a general soreness in the region indicated, persistent in character after a gradual development. The tooth is apt to feel elongated and painful on pressure.

One of two conditions is responsible: 1. The inflammation may arise from external irritation due to infection from foods lodging about the teeth and gums, sometimes forced between these tissues, or from deposits of lime on the roots of teeth, causing inflammation of gums and peridental membrane and accompanying infection. 2. The inflammation may be due to an infection of the tissue surrounding the root arising from an infection consequent to the death of the pulp whether the root canals have been filled or not.

The second division marks the development of a dental abscess.

Treatment and prognosis.

Q. Where caries is the cause of distress what are the methods of treatment?

A. The removal of diseased tooth structure should first be undertaken. For permanence of result all decayed and softened dentine should be removed, after which, if the pulp be not exposed, a filling

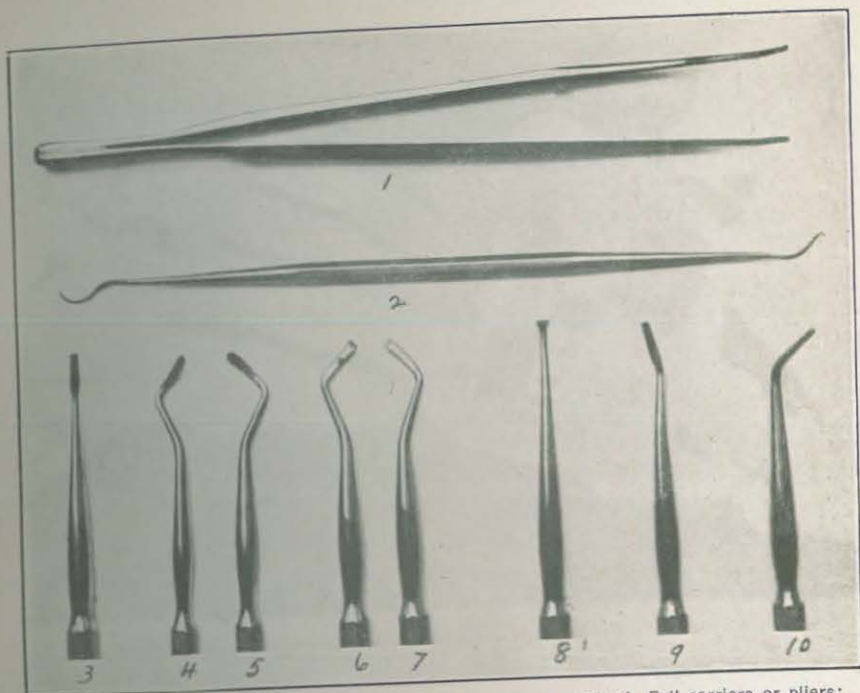


Plate 1.—Instruments required to take care of emergency cases: 1, Foil carriers or pliers; 2, explorer double end; 3, straight chisel; 4-5, spoon excavators; 6-7, hatchet excavators; 8, broad chisel; 9, curved chisel; 10, cement or temporary stopping carrier.

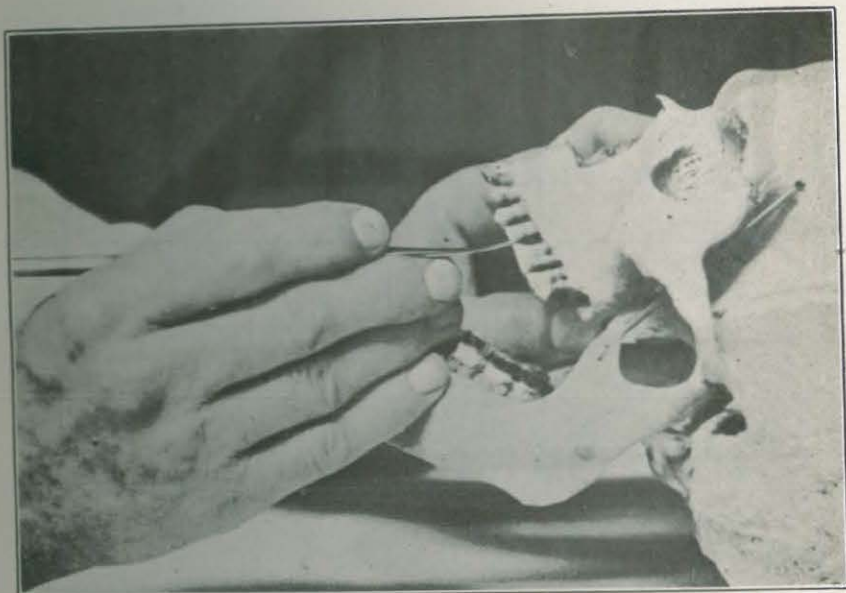


Plate 2.—Curved chisel being used on upper teeth, showing enamel at margin of cavity preparatory to removing decay.

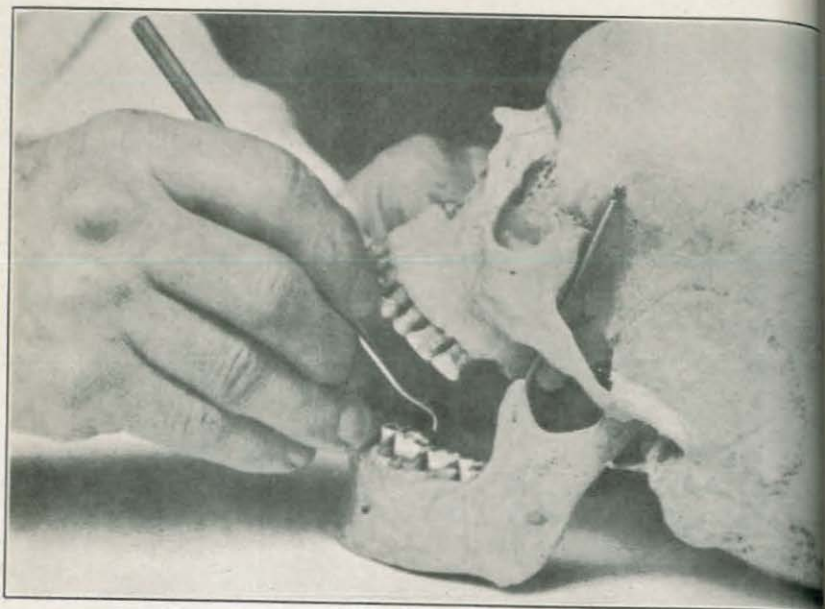


Plate 3.—Hatchet excavator being used to show method of opening up a cavity in a lower molar.

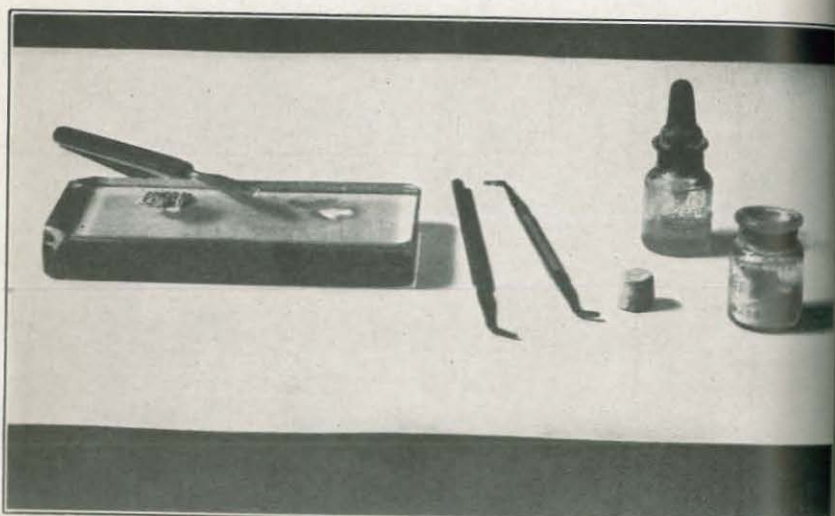


Plate 4.—Equipment required for making a cement filling, showing the liquid and powder on the slab ready for the mix. Side instruments to be used in placing the cement.

is placed in the cavity to prevent further disintegration of tooth structure.

Q. Is it necessary always to remove decay?

A. Unless most of the decay is removed the irritation from the carious mass will continue after a filling is made.

For permanent results and to prevent further decay it is necessary to remove all carious material.

For temporary requirements only, where equipment and experience is limited, it is often better to avoid cutting too deep on account of danger to the pulp, and by medication and temporary fillings tide over a period of weeks or months.

Q. What is the technique of procedure in the treatment of caries?

A. When a cavity exists the frail enamel usually found surrounding the opening should be broken down.

This can be accomplished by the use of the chisel, hatchet, or hoe excavators. It is necessary to make an opening sufficiently large to gain access for further procedure.

The decayed matter may then be removed by a scooping stroke with spoon excavators, passing the end of the blade into cavity, leaving the bottom, or deeper portion, untouched until the last. The removal of decay is usually painful, but by this method of procedure less pain will be inflicted and the danger of plunging the instrument into the pulp is less likely. In order to retain the filling it is necessary to have the cavity when completed a little larger on the inside than at the orifice.

For temporary work, and particularly when one has no dental engine, this may be accomplished by leaving some of the firmer overhanging enamel at the margin.

After removing the decay syringe the cavity thoroughly with a forcible stream of warm water. To maintain perfect dryness the application of cotton rolls in the lower jaw or a napkin if it is the upper jaw passed between the cheek and teeth on one side and the tongue and teeth on the other side. In the case of the lower jaw the tongue should be raised and the cotton roll slipped underneath it.

The cavity can now be dried out by wiping with cotton pellets previously rolled to a convenient size and the filling inserted immediately.

Q. What kind of a filling is indicated in the different cases?

A. Where the trouble is due to irritation from caries and the cavity is not deep after the removal of all decay a filling of cement or even amalgam can be made. Precaution should be taken, however, by visual and tactile observation (with an instrument) that the pulp is not exposed or nearly exposed.

If doubt enters the mind regarding this, wipe the cavity with a cotton pellet dipped in eugenol or oil of cloves (phenol or creosote

will do, but are not so satisfactory) and seal with temporary stopping, which is easily inserted and easily removed.

If the tooth has given considerable trouble, a small pellet of cotton dipped in one of the above drugs and placed in the bottom of the cavity may be sealed in with temporary stopping or temporary cement and the case left for a few days to test it.

The ordinary cement (oxyphosphate of zinc) should not be used for this purpose on account of the difficulty of its removal.

The use of cotton placed securely in the cavity and saturated with sandarac varnish furnishes an excellent temporary filling material, but has the disadvantage of becoming foul after a few days. It, however, is easily inserted and easily removed.

Q. What would be done in case the tooth continues to give trouble after protection by medication and filling?

A. If the pain is of a throbbing or grumbling nature, which would indicate that the pulp is inflamed, the filling should be removed and any remaining decay removed so as to expose the pulp. Hemorrhage may occur and pain follow for a few minutes. After these have subsided syringe the cavity with warm water, unless the better method of keeping the tooth dry by applying a napkin or rubber jaw has been followed. In the latter event it may be washed with sterile water and cotton and a small pellet of cotton dipped in eugenol or creosote laid over the exposure and a filling made without exerting pressure. For this purpose cotton saturated with sandarac varnish or cement flowed over it may be used.

Extraction of the tooth would be advisable if attention could not be given it within a reasonable time thereafter by a competent dentist.

Q. What treatment is indicated when the tooth is sore to pressure and sensitive to heat or cold or both?

A. This would indicate that the pulp has become congested and that infection of the peridental membrane has occurred. If the tooth is to be saved opening into the pulp would be necessary and the above treatment could be followed, but extraction would be the safest remedy where emergency procedure is required.

Q. What would be the treatment when the tooth is sore to pressure, the pain constant and increasing in intensity with no sensibility to thermal tests?

A. If on examination the tooth is found to have a large filling or a very large cavity in it, or has been crowned and perhaps is quite movable, it indicates that an abscess is developing. Relief from pain may often be obtained, where the pulp chamber can be opened into and, if found not to have been filled, by placing a germicide such as formaline, diluted, in the pulp cavity. If the pain does not decrease within two or three hours further treatment is inadvisable. After

the first stages have passed a swelling of the face and gums over the affected tooth will frequently be discerned. It is better under these circumstances to remove the tooth at once or, in the advanced stages where swelling has occurred, an incision may be made by directing a sharp pointed lancet from the junction of the gum and the soft tissue leading to the cheek to a point at the end of the root affected.

If successful in this procedure, pus will follow the lancet in its withdrawal from the wound.

It is well in withdrawing the lancet to widen the incision for freer drainage.

Filling materials.

Q. What materials may be used to advantage in emergency procedures for filling teeth?

A. Amalgam, cement, permanent or temporary, gutta-percha, temporary stopping, cotton, either alone or saturated with resinous matter.

Q. How is amalgam used?

A. The alloy is composed of silver and tin as a basis. Having been melted together and filed or cut into fine granules, it is rubbed up, conveniently in the palm of the hand by a finger, after adding sufficient mercury to amalgamate it. Mercury should be added carefully so as not to get too soft a mixture.

After two or three minutes trituration the mass should be squeezed hard between the fingers and thumb to express an excess of mercury.

It should now be broken into pieces of convenient size and packed into the cavity with flat-end instruments. The amalgam should begin to harden in a few minutes, so that if there is any excess it should be cut away at this time and the filling given several hours time to crystallize before being used. Note that amalgam should be used only where cavities are shallow and there is no danger of involving the pulp. Its use should therefore be limited to those having considerable experience.

Q. What are the cements?

A. There are two distinct varieties. (1) Those that are quite durable and (2) those that are called temporary, which type may be cut with comparative ease and which will usually wear away perceptibly in a few days. The former may be used as a somewhat permanent filling material, the latter makes a good sealing for treatments and very temporary work. Each is composed of a powder and a liquid.

Q. How are the cements manipulated?

A. Place one, two, three, or more drops of the liquid on a clean glass slab or flat porcelain surface and some of the powder one to

two inches from the liquid. With a cement spatula draw a small amount of the powder into the liquid and rub thoroughly, using a little of the liquid, then add a little more of the powder and mix thoroughly. This may be done three or four times until the proper consistency has been acquired. For filling cavities, a consistency about that of heavy molasses, is good, although the temporary cements may be used a little thinner.

The cement should now be picked up from the slab with a clean smooth instrument and carried to the cavity.

By a wiping motion, such as the glazier uses in setting glass with putty, the cement should be wiped or packed into the cavity. It will usually be necessary to apply the cement by two or three additions from the same mix, as it adheres strongly to the instrument. Owing to the rapidity with which it sets or hardens, conservation of time is necessary. The filling should be trimmed of any excess before it becomes too hard, particularly with that portion which projects between the teeth.

Q. What precautions are essential to success in handling cements?

A. The slab on which it is mixed and the instruments for its use should be absolutely clean. The cavity must be perfectly dry or the cement will not adhere. The manipulation must be accomplished within a few minutes as the material hardens quickly. This being particularly so in hot weather, a good method is to use a flat-sided bottle filled with cold water instead of a slab.

Q. How are temporary stopping and gutta-percha used as filling materials?

A. They are softened by heat and while in the plastic state are packed into the cavity. The temporary stopping will be found the easier material to handle, although not so durable as gutta-percha.

By heating the end of a blunt instrument in a flame, these materials may be picked up on it, and, holding above the flame, softened by warming; care should be exercised in doing this not to burn it.

It is usually better to select the quantity required for the filling and pack the entire mass into the cavity at once. Cold, clean instruments are best for packing. The excess may then be cut off by heating a bladed instrument to a high temperature for removal of the surplus. If the instrument is just warmed it will pass into the stopping, which will only adhere to and come away with the instrument.

Q. How should instruments be held for safety and efficiency in cutting?

A. To provide sufficient force and also to prevent the instrument from slipping, it is necessary that it be firmly held and that a rest be procured for the hand. To accomplish this the instrument should

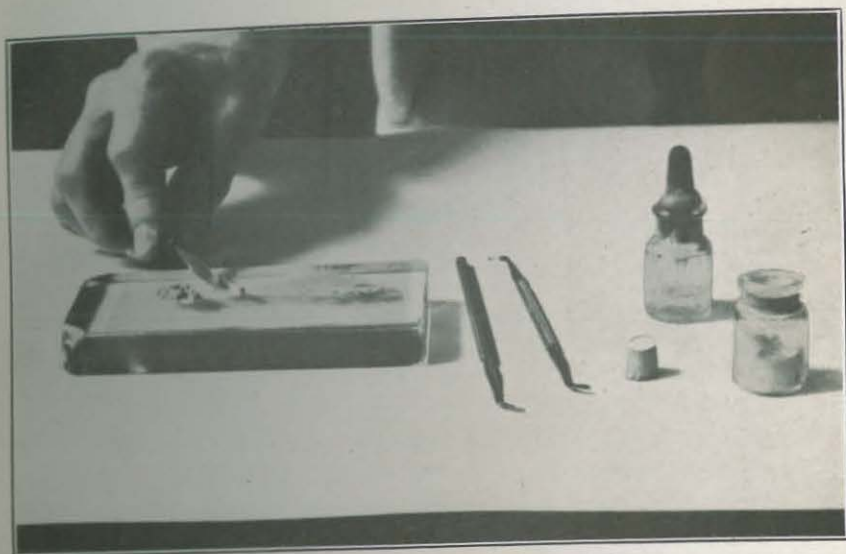


Plate 5.—Technique of mixing the cement.

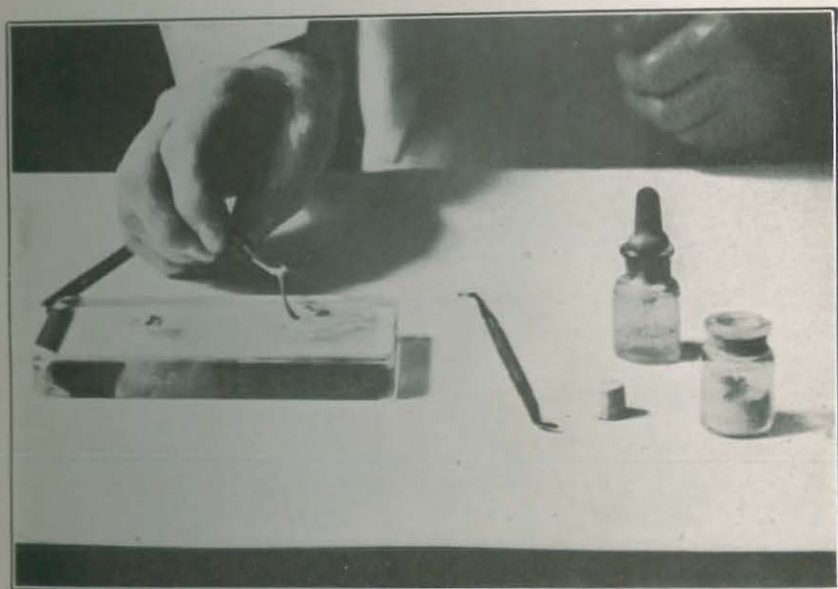


Plate 6.—Showing the consistency of cement ready to use.



Plate 7.—Lifting the cement off of the spatula preparatory to placing it in a cavity.

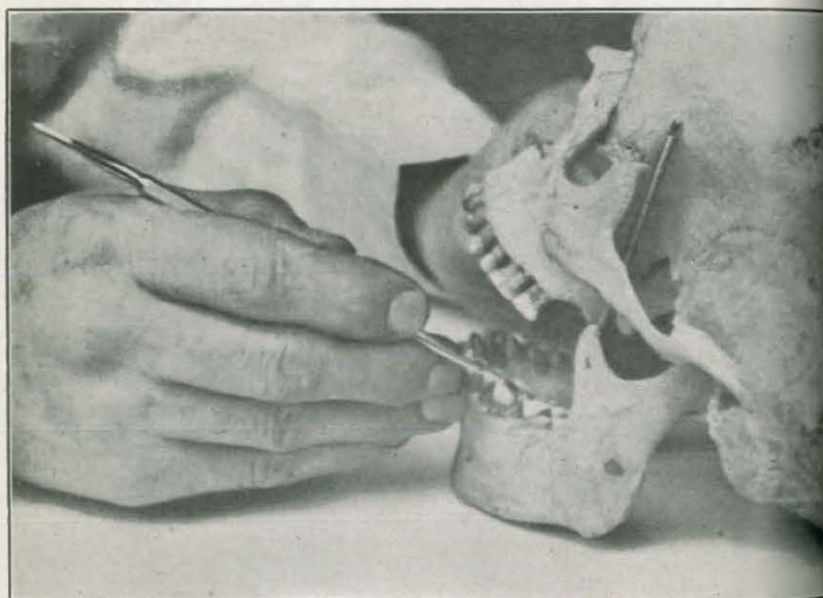


Plate 8.—Carrying the cement to place, showing the wiping motion of the instrument used in inserting the cement in cavity.

be held as a pen in writing, grasping it near the shank between the thumb and first and second fingers; the third and little fingers will then be free to use as rests on other teeth so as to limit the movement of the instrument after the tooth has given away.

The cheek should be held back by the first finger of the left hand in order to admit light, clear vision, and free access; a mirror may also be held in the left hand at the same time to guard the tongue and to reflect light. It is best to so direct the instrument that, if it should pass beyond control, it will strike an opposite wall of the cavity. In breaking down frail enamel a good procedure is to deliver a sharp, light blow on the end of a chisel, which should be firmly held against the enamel to be cut away. This, however, is best done by an assistant.

Q. What positions are best adapted for patient and operator?

A. When the upper teeth are to be worked upon, the chair should be elevated, tipped back, and the head thrown back for the admission of light and vision. The operator will work with greater ease by standing in front of and to the right of the patient.

When the lower teeth are to be worked upon, the chair should be lowered, and the patient placed in an ordinary sitting posture. The operator will stand in front of and at the right, varying this position to one back of and slightly at the left of the patient. If the teeth to be worked upon are on the left side in the lower jaw, a convenient position will sometimes be found by standing in front of and at the left of the patient, remembering at all times to find a rest for the hand holding the instrument.

LABORATORY PROCEDURES ALL HOSPITAL CORPSMEN SHOULD KNOW.

By R. E. WEAVER, Lieutenant (T) Med. Corps, U. S. Navy.

(The formulas and much of the technique described in this article are from the Manual on Practical Bacteriology, by Rear Admiral E. R. Stitt, Med. Corps, U. S. Navy.)

It is impossible to make expert laboratory assistants of all hospital corpsmen. This important branch of our work requires so much practical experience that to expect all men of the Hospital Corps to become skilled laboratory workers would be unreasonable. But all hospital corpsmen should be familiar with certain laboratory procedures which can be carried out on board any ship or at any small station where the Navy standard microscopical outfit and test case are supplied.

Perhaps the making of blood counts is the most important diagnostic procedure a medical officer might wish to undertake, particu-

larly a "white blood count," i. e., the determining of the number of white corpuscles, or leucocytes, in a cubic millimeter of a patient's blood. Diluting fluids should always be kept on hand in the dispensary of a ship or station. These are:

For white count—

Solution of glacial acetic acid 1 to 200—

Easily made by adding to 25 mls. of distilled water 2 drops glacial acetic acid.

For red counts—

Hayem's solution—

Bichloride of mercury	0.5 gm
Sodium sulphate	5.0 gm
Sodium chloride	1.0 gm
Water, distilled	200.00 ml

These solutions should be frequently inspected, and if turbid or having a sediment they should be filtered or renewed. They are most conveniently kept in large-mouth homeopathic vials, so that the pipettes can be easily inserted and immersed in the fluids.

After use, blood counting pipettes should be thoroughly cleaned and dried before being put away. Clean as follows:

1. Fill with a dilute acetic acid solution; eject and fill again if necessary to clear of all blood.

2. Fill with alcohol; eject.

3. Fill with ether; eject and dry. The heat of an incandescent globe is a convenient method of drying. Be sure that the inside is dry, so that the glass bead falls freely from one side to the other before putting away the apparatus.

If a syphon pump is available, it can be used for cleaning and drying the pipettes.

The counting chamber and cover glass should be carefully and thoroughly cleaned and dried after use. Usually clear water is all that is necessary. Wash occasionally with soap (not tincture of green soap) and water and polish dry with a soft cloth. Never use alcohol, xylol, or anything which would soften the cement with which the counting chamber is mounted on the slide.

The preparation of microscopic stains is thoroughly discussed in the Manual of Bacteriology (Stitt), which is issued to the service, and formulas for them may always be found in that book. Wherever a microscope is available the following stains should be always kept on hand for the use of the medical officer:

Löffler's alkaline methylene blue.

Carbol fuchsin.

Saturated solution methylene blue.

Ponder's stain.

Gram's stain.

Balch's stain.

The above are very easily made, and the formulas are as follows:

Löffler's stain:
 Saturated alcoholic solution methylene blue----- 30 mils.
 Solution potassium hydroxide, 1 to 10,000----- 100 mils.
 (Note: 2 drops of a 10 per cent solution potassium hydroxide in 100 mils. water makes 1 to 10,000 solution.)

Carbol fuchsin stain:
 Saturated alcoholic solution basic fuchsin----- 10 mils.
 Aqueous solution phenol 5 per cent----- 100 mils.
 Saturated solution methylene blue:
 Dissolve 3.34 gms. methylene blue in 50 mils. water.

Ponder's stain:
 Toluidin blue----- .02 gms.
 Glacial acetic acid----- 1.0 mils.
 Absolute alcohol----- 2.0 mils.
 Distilled water, to make----- 100 mils.

Gram's stain:
 Staining by Gram's method requires that three preparations be kept on hand. They are as follows:

(a) Gram's gentian violet:

This is made from two stock solutions which keep indefinitely:

No. 1. Gentian violet-----	2 gms.
Aniline oil-----	9 mils.
Alcohol (95 per cent)-----	35 mils.
No. 2. Gentian violet-----	2 gms.
Distilled water-----	100 mils.

Mix 1 mil. of No. 1 with 9 mils. of No. 2 and filter. This stain does not keep well. Exposure to light spoils it; keep it in the dark. It should have a rich, creamy, violet appearance.

(b) Gram's iodine stain:

Iodine-----	0.5 gms.
Potassium iodide-----	1.0 gms.
Distilled water-----	150.0 mils.

This solution deteriorates rapidly. It should have a rich port wine color.

(c) Saturated aqueous solution of Bismarck brown:

Dissolve 0.2 gms. Bismarck brown in 100 mils. boiling water, cool and filter.

Sometimes dilute carbol-fuchsin will be required for use with Gram's method. This is made by mixing 1 part of carbol-fuchsin stain with 10 parts of water.

Balch's stain, which is used for blood smears, is somewhat difficult to make. It is issued by the Naval Medical School at Washington on request of medical officers and is sent out in sealed glass tubes immersed in the proper quantity of methyl alcohol. To use, break the tube and dissolve contents in the methyl alcohol in the bottle in which tube was contained; let stand for about 48 hours, filter into dropping bottle, and it is ready to use.

Dry stains should be handled and weighed with care and accuracy. Do not waste them as some are expensive and difficult to obtain at

the present time. Be sure the scales are accurately balanced. Use scale pan papers made of waxed paper or paper with glazed surface. Foolscap paper answers well for this purpose. As a rule make stains in small quantities, as they go a long way and deteriorate with age and on exposure to light. All of the dry stains and all prepared stains should be kept in a dark place. It is a good plan to use corks in the dropping bottles when stains are not in use. This applies especially to Balch's stain or other blood stains made with alcohol. There is less danger of evaporation if corks are used and the glass stoppers frequently become so tightly lodged that they are loosened with difficulty.

A culture is the material in which or on which bacteria are grown. There are many kinds, the manufacture of which is thoroughly described in the Manual of Bacteriology. The making of some requires skill and practice. All should be made with great care. The following should be kept on hand at all times. These are not difficult to make:

Nutrient bouillon—

If a large enough balance is available counterpoise the inner compartment of a rice cooker thereon. If no balance is available put in the inner compartment of the rice cooker 1,000 mls. of water and make a scratch mark on the side to indicate the height of the water in the vessel. Now place in a mortar 3 gms. of Liebig's meat extract, 10 gms. of peptone, and 5 gms. of sodium chloride. Dissolve the whites of one or two eggs in 1,000 mls. of water; add this egg white water little by little to the extract, peptone, and salt in the mortar until a brownish solution is obtained. Pour this into the inner compartment of the rice cooker. In the outer compartment place a 25 per cent solution of sodium chloride (common salt). Apply heat, allow to come to a boil, and to continue boiling from 15 to 20 minutes. Do not stir. Place inner compartment on the scales with its counterpoise and a 1-kilo weight on the other side; add water until the two arms balance. If the balance is not available fill to the scratch mark previously made with distilled water. This, of course, is to compensate for the water lost by evaporation during boiling. Filter through paper and sterilize in the dressing sterilizer for 15 minutes at 10 to 15 pounds pressure. Of this a 1,000 mls. may be made up and a basket of tubes prepared, the balance being kept in an Erlenmeyer flask. Put enough bouillon in ordinary test tubes to fill them about $1\frac{1}{2}$ inches, plug the tubes with cotton, and sterilize them in the dressing sterilizer for 15 minutes at 10 to 15 pounds pressure. The flask should also be plugged with cotton and sterilized in the same manner.

Nutrient agar—

Dissolve $1\frac{1}{2}$ per cent agar in the bouillon above described, filter through cotton in a glass funnel which has been heated in boiling water. Ordinarily 4 dozen tubes of this will be sufficient to keep on hand and 500 mls. is enough to make up at once. Put in ordinary test tubes the same as bouillon, sterilize in the dressing sterilizer, and on removal from the sterilizer let cool on a slant so that there will be

a long smooth surface running from about 2 inches below the mouth of the tube to near the bottom. Slanting may easily be done by placing the tubes in a row on the counter or table, with the plugged ends resting on a towel folded several times lengthways. When cool this medium is hard like gelatin and bacteria are planted on the long smooth surface.

Diphtheria bacilli do not grow characteristically on ordinary media, and a small quantity of culture medium for use in examining smears from suspicious throats should always be on hand. For this purpose Löffler's blood serum is usually used, but it is not easily made and the blood serum (obtained from slaughterhouses) is not always to be had. The following is an excellent substitute:

Whole egg media—

First add 1 per cent glucose to ordinary bouillon. Add 10 to 15 mls. of this 1 per cent glucose bouillon to the white and yolk of one egg and rub in a mortar to a smooth mixture. Put 5 to 10 mls. in ordinary test tubes and inspissate. Inspissating means "thickening," which in this case is accomplished by the coagulation of the albumen in the egg. Place cotton or a folded towel in the inner compartment of a rice cooker and lay on this the tubes of egg media slanted so that they will be as described for the agar slants. Care should be taken in slanting the tubes that the cotton plugs are not touched by the contents. On top of a layer of tubes place more cotton or another towel and then more tubes, and so on until the inner vessel is about half full. Now put water (not salt solution) in outer compartment so that it will entirely surround that part of the inner vessel containing the tubes and let boil for one to two hours. The inner vessel must be weighted down. On removal the media will be found hard in the tubes. The following day sterilize these tubes in the dressing sterilizer at 7 pounds pressure for 15 minutes.

All the culture media above described can, with care and patience, be made in the dispensary of any ship or small station and stowed in the sick-bay refrigerator. The material is all on the supply table, being a part of the original equipment of the test case and microscopical outfit and may be obtained, as required, on Form 4 from any naval medical supply depot. For preserving media it is a good plan to prevent evaporation by dipping the cotton plugs in paraffine and then placing the plugs in tubes after the media have been sterilized. The tops of the tubes must be heated gently to remove the plugs. Paraffine may be obtained by melting candles if necessary.

All hospital corpsmen should understand how to collect specimens for examination. Urine specimens may be obtained in the large-mouth bottles in which various salts are received and which should be saved for this purpose. These bottles must be sterilized in boiling water and kept plugged with cotton. Always label a specimen of urine with patient's name and rate and the date of collection. The labels should be firmly attached or secured to the bottle but it is not necessary to use adhesive plaster which is expensive. Every sick

bay and sick quarters should be provided with at least one large bottle suitable for saving 24-hour specimens of urine which sometimes amount to 2,500 to 3,000 mls., normally about 1,500 mls. Sometimes the medical officer will require 24-hour specimens collected in a number of small bottles, in which case the large-mouth bottles described above can be used. Care should be taken that the sample does not decompose. It should preferably be kept in a cool place and if this is not possible a few crystals of thymol may be added to prevent decomposition. The ordinary tests made in examining urine should be familiar to hospital corpsmen.

Normal urine is pale amber in color and is perfectly clear. The quantity ordinarily secreted in 24 hours is 1,200 to 1,500 mls.

The normal reaction is slightly acid. To determine the reaction wet one end of a small strip of *blue* litmus paper with the sample. If the reaction is normal a pale pink color develops; if it is markedly acid the litmus paper will turn red very quickly; if no change occurs the sample may be either neutral or alkaline. In this case repeat the process, using a small strip of *red* litmus paper. If this turns blue the sample is alkaline. If no change takes place it may be pronounced neutral.

Specific gravity is normally between 1.018 and 1.022 and is obtained with the urinometer which is a form of hydrometer for liquids heavier than water. Fill the glass cylinder to about 2 inches from the top with the urine and immerse the urinometer in it. Care should be taken not to drop the instrument into the sample for if it should be of very low specific gravity the urinometer may sink so rapidly that it will break on striking the bottom of the cylinder. Lower it gently until it comes to rest. Be careful that the cylinder is perfectly perpendicular and that the urinometer does not cling to the inside; it should ride up and down freely. When it comes to rest take a reading on the graduated stem at the level of the fluid.

To test for albumin filter a portion of the sample and pour a sufficient quantity into an ordinary test tube to fill it two-thirds full. Now grasp the lower end of the tube and hold it over the flame of an alcohol lamp or Bunsen burner so that the heat is applied only to the upper portion of the urine in the tube. When the specimen boils hold to the light in such a manner that any turbidity in that portion which has been heated may be detected. If a turbidity is present add 3 to 10 drops of 5 per cent acetic acid, drop by drop, agitating the tube so that the acid will be thoroughly diffused throughout the boiled portion. If the cloudiness clears up it was due to an excess of phosphates; if not, albumin is present. In samples containing only a small quantity of albumin the turbidity may consist of only a faint cloudiness and the specimen must be carefully scrutinized. Examination by means of transmitted light or holding it in front of a black

surface renders more easy the detection of slight traces of albumin. The advantage of this technique wherein only the upper portion of the sample is boiled is that it makes possible a contrast between heated and unheated portions. If carried out carefully there will be no bubbling and boiling over of the contents of the tube and a test-tube holder is unnecessary. The turbidity formed is the result of coagulation of the albumin by the heat and coagulated albumin is not soluble in dilute acetic acid.

The most common test for sugar is made with Fehling's solution. This should be carried in stock, in small quantities, and is made as follows:

Solution A:			
Copper sulphate	-----	34.0	gms.
Water	-----	500.00	mils.
Solution B:			
Sodium and potassium tartrate (Rochelle salts)	-----	173	gms.
Sodium hydrate	-----	50	gms.
Water	-----	500	mils.

To use, pour equal parts of solutions A and B into a test tube (about 5 mils of each), mix well and dilute the rich blue solution obtained with two parts of water. Boil the upper portion of the diluted Fehling's solution in a flame and add the urine from a pipette, drop by drop; if a red or yellow precipitate forms it is due to the presence of glucose or grape sugar, which is the form of sugar which occurs in urine in diabetes. In order to be familiar with this reaction the test should be made, using a specimen of urine to which has been added a small amount of glucose or Karo syrup. Other precipitates sometimes occur which the novice might pronounce the result of sugar but which are due to other ingredients. These precipitates usually have a muddy or grayish appearance and are not at all characteristic of that formed by sugar. In urine of high specific gravity, which may be the result of fever or other conditions which cause concentration, a precipitate sometimes occurs which is of a greenish color and which is not due to sugar.

The test for acetone is made by adding to 10 mils of the sample one drop of 5 per cent solution of sodium carbonate, then add an aqueous solution of iodine (Lugol's solution) until a deep brown color is imparted. Now add more sodium carbonate solution until the brown color disappears. If acetone is present a yellow precipitate will be noticed and the odor of iodoform is very pronounced. Alcohol, if present in the urine in very large quantities, will also give this reaction.

The test for blood in urine is made as follows: A sample (about one-third of a test tube) is heated to the boiling point and then cooled. Now add 10 to 15 drops of an alcoholic solution of benzidine,

then a few drops of dilute acetic acid and finally 10 to 15 drops hydrogen peroxide. If blood is present a deep blue color develops within a few minutes. The reason for heating the urine is to prevent interference with the reaction by other bodies which are sometimes present and which produce the same effect.

If the medical officer wishes to make a microscopic examination of the urinary sediment, a portion should be centrifuged. Mix the entire specimen thoroughly, taking care that any sediment which has settled is thoroughly stirred up, and fill a sedimentation tube within an inch of the top. Centrifuge for two or three minutes at moderate speed. Place the tip of the finger over the end of a small pipette, lower it to the bottom of the centrifuge tube, and allow the sediment to flow in. Remove and place on a microscopic slide for examination.

Sputum should ordinarily be collected for examination in the paper sputum cups issued by the supply depots. They are easily handled and when the doctor is through with the specimen the paper cup and contents can be wrapped in an old newspaper and *taken to the fireroom for burning*. The metal frames should be sterilized by boiling and agate sputum cups, if used, should also be boiled. Ointment jars should not be used for this purpose; the tendency is too strong to throw them overboard rather than clean and sterilize them and they are too expensive for such use.

Specimens of feces may be required and they are usually wanted to examine for intestinal parasites or their eggs, for chemical tests for the presence of blood or for microscopical examination or culturing to determine the presence of disease causing bacteria. Ordinarily in ward work in hospitals or on board ship the specimen is saved in a bedpan or closed stool which should be sterilized before use. If small specimens are desired to be saved several portions should be selected and placed in a suitable receptacle; the paper sputum cups answer admirably for this purpose and can be destroyed after use.

THE CAMPAIGN AGAINST MOSQUITOES.

By CARROLL FOX, Surgeon, U. S. Public Health Service.

The accompanying illustrations tell a story which is of interest to all those engaged in the practice of preventive medicine, and therefore to the Hospital Corps of the Navy.

The first photograph shows hospital corpsmen ready to engage in clearing a ditch which has become overgrown with weeds and the flow of water thus impeded. The second photograph shows the work in actual operation, while the third shows a ditch from which the vegetable growth has been removed, and whose sides have been



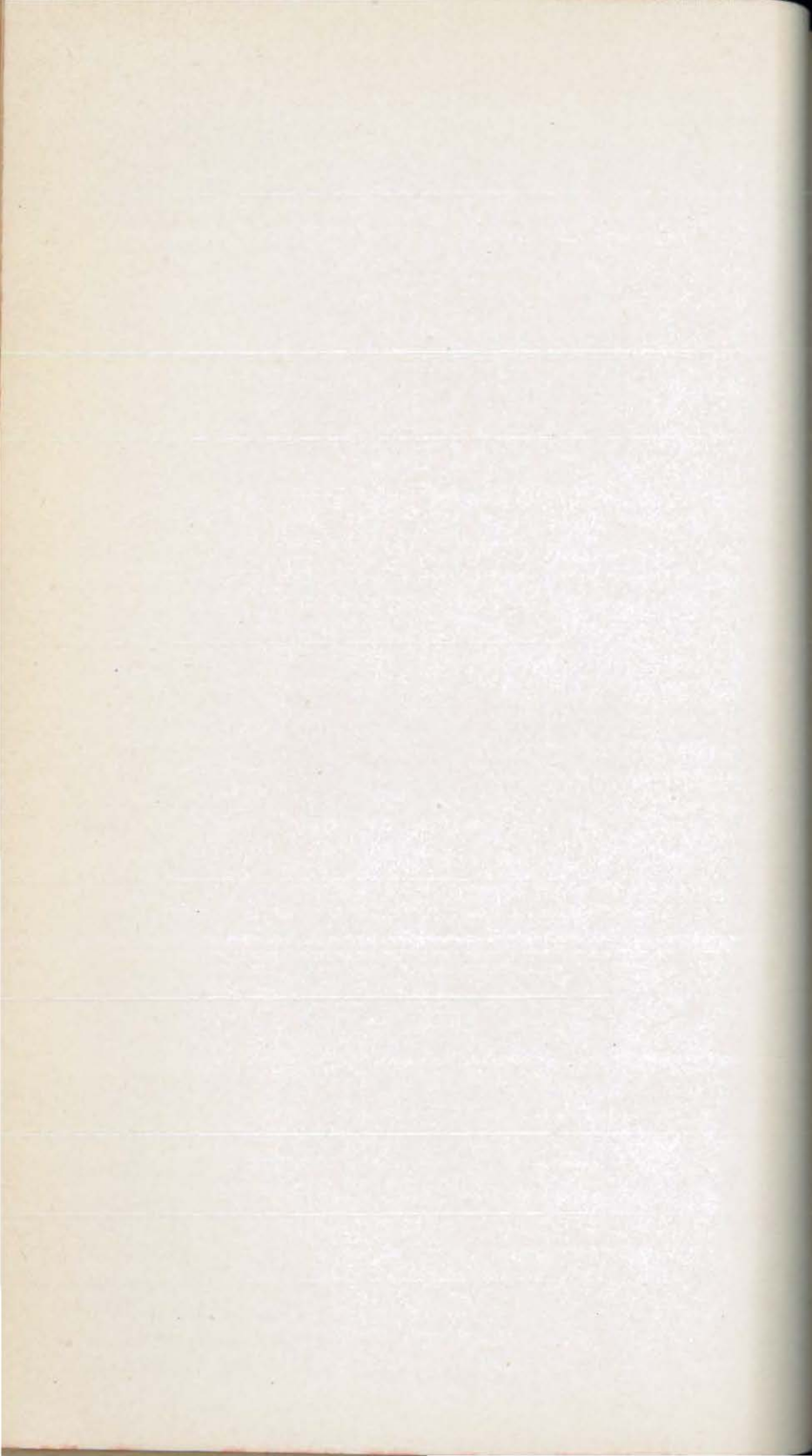
Plate 1.—Ditch not worked.



Plate 2.—Ditch partly finished.



Plate 3.—Ditch finished.



straightened out as much as possible, so that there is a free flow of water and exposure to sunlight.

The question may arise as to why this was necessary. Most of the members of the Hospital Corps may know that there are at least four diseases which are carried from man to man by mosquitoes. These diseases are malaria, dengue, yellow fever, and filariasis. The female mosquito lives on the blood of warm-blooded animals. To get this food the mosquito pierces the skin with its proboscis, punctures a tiny blood vessel, and sucks the blood into its stomach. If the person bitten happens to be suffering with any one of the diseases mentioned above, organisms causing that disease are circulating in his blood, and some of them will naturally be sucked with the blood into the stomach of the mosquito. After living in the body of the mosquito for a certain period and undergoing certain changes, they are then transferred to a human being during the act of biting. For instance, in malaria the malarial parasite enters the stomach of the mosquito, passes through the stomach walls, and then goes to the salivary glands. From here it is inoculated with the saliva into a person at the time the mosquito bites. It is the saliva of the mosquito that causes the itching after the bite. In order to prevent malaria, as well as other mosquito-borne diseases, it is obviously necessary to eradicate mosquitoes.

There are a number of different kinds of mosquitoes. The kinds that carry malaria are different from the mosquitoes which carry yellow fever, which in turn differ from those which carry dengue and filariasis, but all mosquitoes have a similar life history. They lay their eggs on the surface of water. The eggs in about 24 hours develop into larvæ, which are commonly known as "wigglers." After a certain length of time, depending upon the species of mosquitoes, the "wiggler" begins to swell about the thoracic region, turning into what is called a "pupa." Both larva and pupa live in the water, coming to the surface to breathe through little breathing pores. The shell of the pupa then splits and the adult mosquito emerges. It is clear then that to do away with mosquitoes one must eradicate their breeding places, namely, collections of water that is more or less still or stagnant. Such collections of water may be natural ponds or slow-moving streams, rain barrels, cisterns, discarded tin cans, bottles, in fact, anything that will hold water for a sufficient length of time to permit the mosquito to breed, a period averaging somewhat less than 10 days.

The malarial mosquito may be recognized by its position while resting, for the body is held vertical to the surface on which it rests, while other mosquitoes rest with the body parallel to the surface. The malarial mosquito also has spotted wings. Its larva or "wiggler" lies with the body parallel to the surface of the water, wig-

gling along the surface unless greatly disturbed, when it will die. The larvæ of other mosquitoes hang head down from the surface of the water and when disturbed wiggle quickly to the bottom. Malarial mosquitoes breed along the edges of ponds and slow-moving streams and ditches. They are found usually along the sides where the water is quiet and protected by a growth of water plants. Where no such plants are found and the stream of water has a free flow and where there is exposure to the direct rays of the sun, mosquitoes will not develop. It is clear then that to prevent mosquitoes from breeding in streams and ditches, all growth must be removed from the sides and the edges be straightened out as much as possible as to permit of a free flow of water. The illustration shows that this is exactly what the men of the Hospital Corps have done, thus eliminating what was probably causing not only a pest of mosquitoes but a possible source of disease.

Malaria is very prevalent in our Southern States, and a great deal of antimalarial work has been done by the Navy in and surrounding naval stations, notably at Quantico, Pensacola, Hampton Roads, Key West, Miami, Gulfport, Charleston, and other places. Ponds and marshes have had to be filled and drained. Ditches have had to be built and kept in good condition. Streams have had to be straightened and cleared of vegetable growth. Bodies of water have had to be oiled, for oil spread on the surface prevents the larvæ from breathing by closing their breathing pores. It also prevents the eggs from developing. Old bottles and cans have had to be disposed of so that they would not hold accumulations of water and thus become a source of mosquito breeding. Sometimes work of this kind must be done on a very large scale, in which case it requires a large expenditure of money. Many times, however, the hospital corpsmen, under the supervision of a doctor, can through their own efforts do much to eliminate mosquito-breeding centers from the reservation. Work to be done on a large scale usually requires some engineering knowledge, and therefore a civil or sanitary engineer has to be called upon. Laborers must also be employed. Here the hospital corpsman who has a knowledge of the subject should supervise the work of the laborers, to the end that satisfactory results will accrue.

BOILS.

By GEORGE F. COTTLE, Lieutenant Commander, Med. Corps, U. S. Navy.¹

Everyone's skin contains germs, bacteria, the commonly found ones being called cocci. If we make a culture from the skin and plate

¹ The illustrations for this article were prepared by Pharmacist's Mate 3C Ira T. Schuldt, U. S. Navy.

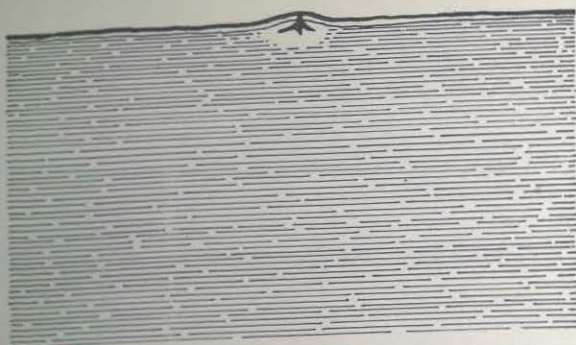


Plate 1.—Beginning infection.

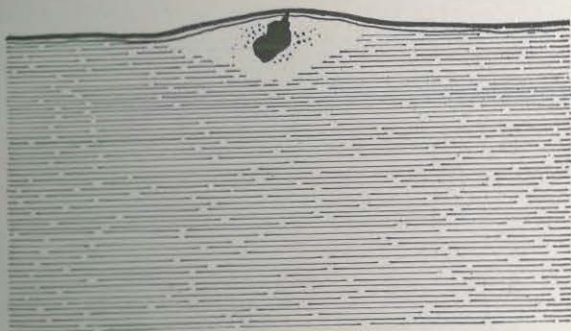


Plate 2.—Advancing infection.



Plate 3.—Beginning induration.

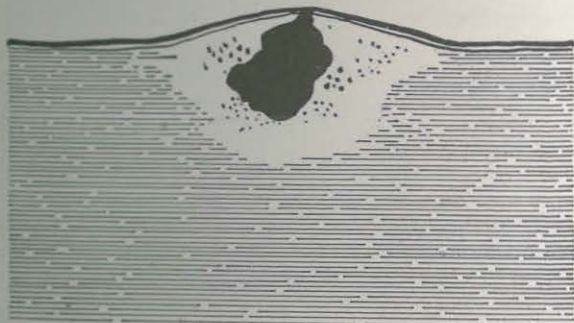


Plate 4.—Well-circumscribed infected area.

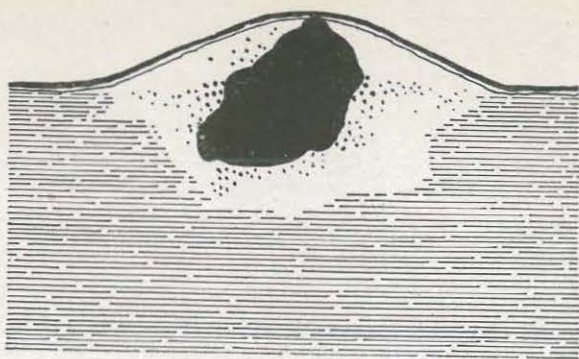


Plate 5.—Pointing and breaking down.

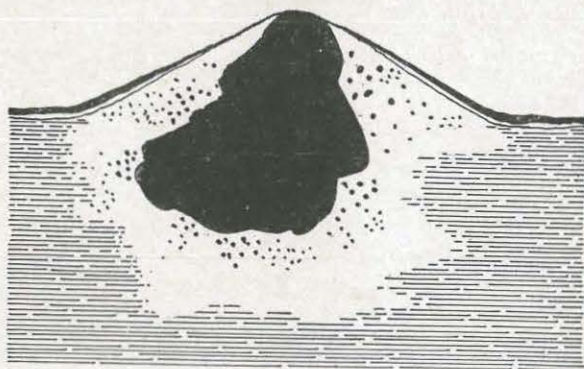


Plate 6.—Tending toward spontaneous cure.

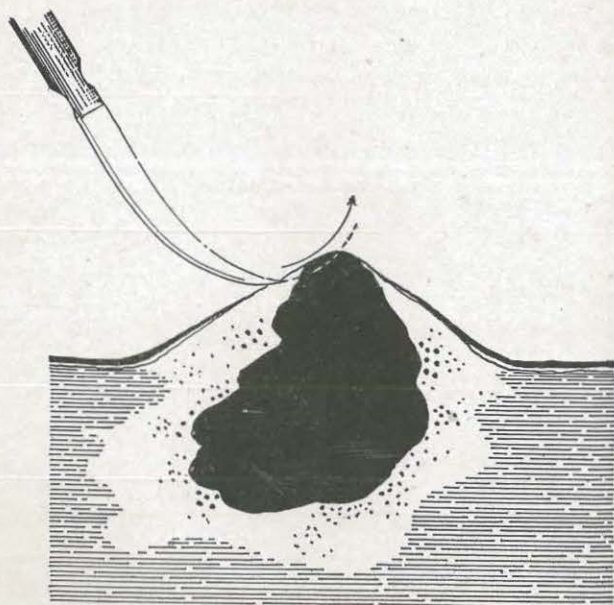


Plate 7.—Ripe to cut.

it out, we find colonies of staphylococci and a few streptococci among other less common bacteria. It is these bacteria which cause the redness, inflammation, and infection that occur in a cut or a bruise. It is these germs that we endeavor to get rid of when we "scrub up" the hands before a surgical operation, and many of which are killed off by sterilization of the skin with iodine prior to a clean surgical operation.

If the skin is unbroken or uninjured, these germs can not get through into the tissues underneath. When we take a bath and cleanse the skin with soap and water, we wash off many thousands of these bacteria, and get rid of them. On the surface of the skin they do not grow very luxuriantly and they do no harm. If they get into the tissues under the skin either through a cut or scratch, or by entering a sweat gland or hair follicle, they grow so rapidly that overnight they may multiply many thousandfold and in the growth cause inflammation with the attendant swelling, redness, and perhaps pain, and they may even go on to cause the more severe general infection called "blood poisoning"; or the reaction set up in the tissues by their growth may be more limited in extent, so that an abscess is formed or the cellular tissues may be inflamed without abscess formation, so that we have what is known as a cellulitis. The products of the inflammation may be taken up by the lymph vessels, giving rise to the "red line" of lymphangitis, or by the lymph nodes, the swelling and pain of which is called lymphadenitis.

The boil is a perfect example of an infection. The presence of a boil means that in some way, generally through a sweat gland or hair follicle, the bacteria which live on the skin have gotten into and beneath the skin and are multiplying fast; that the tissues are being poisoned by their growth; that the body fluids and cells are fighting the infection. First comes a little pimple that itches or hurts, then a swelling that is red hot and painful if bumped, later a larger swelling that is hard and sufficiently painful perhaps to keep the sufferer uncomfortable. After a day or so the thing may "come to a head," break open, discharge its content of pus, and heal up, or it may spread to the near-by tissues and cause a cellulitis, which may result in abscess formation or produce a general infection, a lymphadenitis, or a serious spreading cellulitis.

This painful, annoying, unpleasant, and at times almost dangerous infection commonly called "boils" is common among young men. It frequently occurs in the Navy. Seldom sick enough to be kept away from his work, the afflicted one often will stay away from the doctor, or the hospital corpsman in the belief that the "boils" will come to a head and then disappear. This condition is also seen among athletes. It often occurs in college men in training for the base ball, football, or rowing contests at college. It sometimes greatly inter-

feres with the efficiency of the best man in the crew of a race upon which an entire ship's company is ready to bet its last dollar. Men of the deck force, the fireroom force, or other section of the crew may be afflicted, and the officers are by no means exempt.

The treatment of this condition varies with the case and with the stage of the infection. When the boil first appears it should be helped to "come to a head." The old fashioned household remedies, the use of a poultice of bread or hot bran, or the old salt's application of a quid of tobacco are examples of the usual remedies. These are seldom used by the doctor, although they all have one common good quality: they prevent the sufferer from squeezing or injuring the boil. This is a good thing, because squeezing a boil will tend to spread the infection and make it worse. Nature will cure many boils if they are not squeezed or bumped and thereby made worse. Of course, there is a moment when they have ripened or come to a head when a slight squeeze may empty out the pus and hurry the cure, but the exact moment when this should be done is difficult to determine and if the squeezing is done too early, harm, and perhaps serious harm, will result.

There are several good applications that are of value for the hospital corpsman to use to help nature's effort at a cure. The principles upon which treatment should be based is as follows:

1. Protect the area of inflammation against injury and against bumping or a squeezing of the inflamed area.
2. Protect the surrounding skin against infection from the discharges of the boil.
3. Immobilize the inflamed area as far as possible.

A proper dressing will meet these conditions. It should be large enough to cover the entire area of the inflammation as shown by the redness and swelling. It should be so arranged as to be immediately fixed in place and so as to interfere as little as possible with the patient's occupation and the daily necessities of eating, washing, dressing, and undressing. If the dressing is too tight, too loose, too large, too small, or not fastened securely, the patient will return with the dressing off and the statement will be made that "it came off itself." The kind of dressing to use varies. It should, however, be clean—that is, either sterile or antiseptic. It should help the skin to soften and the inflammation to limit itself. It should not seal up the opening in a boil which has opened and is discharging. The following method is a simple and effective one: Apply a little ointment, as for instance ichthyol or the aristol and opium ointment found in the medicine box or boric-acid ointment; cover the ointment and the area of inflammation with a pledget of cotton made to stick to the skin by sealing the edge with collodion. If the boil is larger, cover the ointment and the boil with a gauze pad, thicker at the cir-

cumference than at the center, held on by means of adhesive. Ichthyol stimulates the circulation and at the same time softens the skin, as would a poultice.

Another method is to apply a wet dressing held in place by a bandage with perhaps a piece of oil silk or rubber tissue between the bandage and the wet dressing. Bichloride, 1-5,000, or boric acid are frequently used.

After a day or so, if the area of redness does not extend beyond the dressing, favorable progress will be noted. The boil will be hard and well defined at the edge and soft or fluctuating at the center. In a day, or perhaps in two or three days, a yellow spot will appear at the apex, where the skin will get thin or soft and perhaps fluctuating. In this stage there is a moment when the boil may break of itself or when it may be carefully opened by the hospital corpsman as follows: With an extremely sharp-pointed and well-sharpened curved bistoury, nick the apex without causing pain to the patient. If the knife is not extremely sharp at the point, cutting can not be done without pressure, and this pressure will be brought to bear upon the inflamed base and edge of the boil and the patient will be made to suffer unnecessary torture. If the nicking is done just at the apex and then a wet dressing put on gently and gently renewed once or twice each day, the cure of a boil may be slightly hastened by such a small incision. The decision as to just when to help a boil recover by a cut can be made successfully only by one who has had experience. The hospital corpsman who adds unnecessary pain to the sufferings of his patient is doing injury where he should be doing good. One of the primary rules of first aid is to relieve the patient's pain if you can; add to his pain only when it becomes imperative to do so.

If the redness and swelling do not remain localized, if a red line is extending from the boil, if the arm or leg or the lymph nodes in the axilla or groin are swelling, if the patient has a fever, get him to a doctor as soon as possible. Above all, if these things are occurring, do not squeeze the boil, and do not make a little cut in it.

A boil that does not come to a head—a "blind boil"—may be cut deeply under local anesthesia, the cure hastened, the pain made to disappear, and the more serious accompaniment of cellulitis, etc., avoided. This treatment, however, is better carried out by a doctor than by a hospital corpsman. Before a boil comes to a head, if cut, it should be cut deeply from base to apex, and entirely through the inflamed area with a very sharp knife that cuts without pressure. With careful local anesthesia this can and should be done, without causing the excruciating pain so often inflicted on the sufferer. A halfway cutting of a boil at an early stage is often worse than nothing. The so-called medical incision should be avoided, except in the last stage, that of actual fluctuation. Before fluctuation, or in

the presence of a spreading cellulitis, if a cut is made it should be wide and deep and with a good local anesthetic and made by a doctor rather than by a hospital corpsman. After a boil has been cut as before the dressing is applied, and sometimes even before it is ready to cut, the use of a dry cup may help things along if one rule is remembered and followed—do not give pain by the use of the cup. The cup or glass (a medicine glass or even tumbler may be used) should be large enough to entirely cover the area of inflammation. It should be placed so that the whole area of redness is under the glass. It should have an amount of suction sufficient to hold well for five minutes; it should not hurt, either in the application, removal, or during the period of its application. It should be taken off in about five minutes and the dressing then renewed after the serum and discharge brought out by the cupping has been gently wiped away.

All this has been about one boil. Commonly, more than one is present in the one individual. They come in crops, so that in the course of a few days, or perhaps a week, there may be dozens of them. The name applied to the occurrence of many boils is furunculosis. The local treatment is the same for many as for one, i. e. *cover, cleanse, protect against squeezing, watch and wait; get a doctor if any of the boils are spreading without coming to a head.*

But what of the patient? While we are taking care of the boils as they occur he wants to stop new ones from coming. He wants to be treated so that they will stop coming. This is a difficult thing. Often they stop of themselves and the patient gives credit to the treatment that has been given. Sometimes, no matter what the treatment, the boils continue to develop. Treatment to stop the recurrence of boils is best carried out by a doctor. If you are on ship without a medical officer and you have on board a man who has furunculosis (boils), get him off the ship, send him to a hospital or to a doctor; do not go to sea with him if you can help it. He will be a care, he will be uncomfortable, and if he does not get well quickly under your treatment his discomfort and his appearance will cause the crew to discredit your ability as a first-aid man. Another good reason why you should get rid of a man with boils is that often a change of diet is all that is needed to effect a cure. Another is that at the hospital or shore station frequent baths, change of diet, changes of clothing, and sterile dressings are more easily obtained than at sea, and these help greatly in reducing the number and size of the boils. If you are at sea when the case appears and several days must elapse before you can get a doctor, or if the captain needs the particular man or officer so badly that he does not want him sent ashore, do three things for him in addition to the local treatment above described:

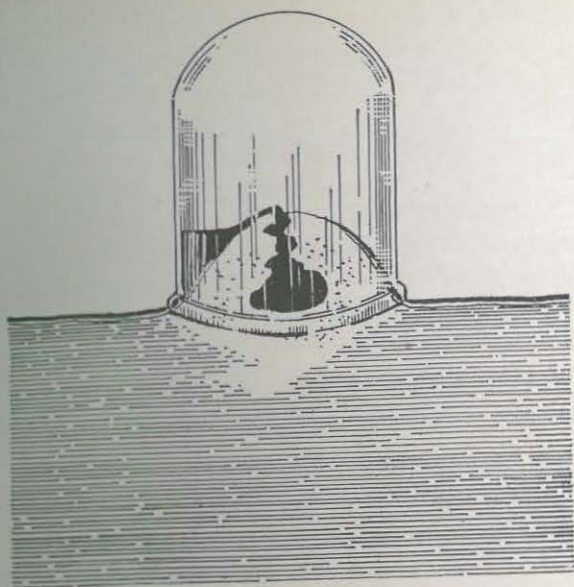


Plate 8.—Bier cupping.

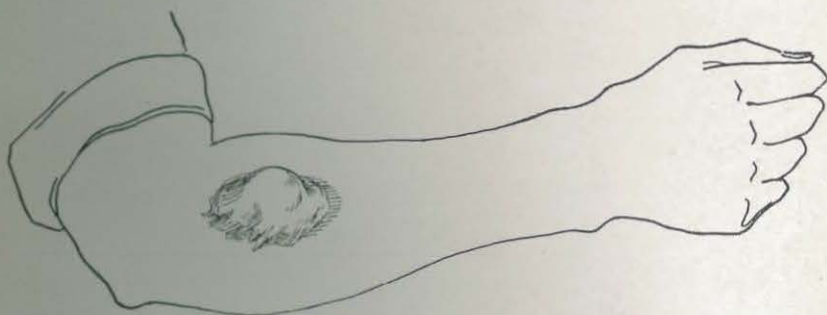


Plate 9.—Cotton and collodion dressing.

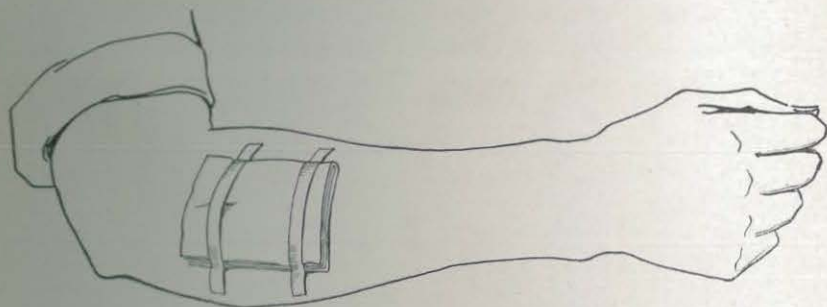


Plate 10.—Adhesive and gauze dressing.



First, employ cleanliness and advise him to put on *clean* underclothing at least twice as frequently as is his custom (have the underclothing *boiled*, if possible, to kill all germs); wash his working clothes, dungarees, etc., every other day, and have him keep his skin cleaner than usual. The hospital corpsman should wash around the boil with antiseptic solution at each change of dressing and catch all discharges in the dressings. These measures will get rid of many germs and lessen the chance of reinfection and of infecting others on board.

The next thing is the diet. Add to his diet fruits and greens—all he will eat. If a variety of fresh fruits and vegetables are not obtainable, advise cabbage, onions, and canned fruit in excess of his usual consumption. Finally, there is medicine. Medicine is of the least importance; it seldom is effective, but often will strengthen the patient's opinion of your abilities so that he will be more ready to carry out your advice as to extra cleanliness and diet, which are all-important. One form of medication frequently used is calcium sulphide gr. 1 t. i. d. There are many others, however, among which may be mentioned brewer's yeast. The use of calcium sulphide has the sanction of many years of use as well as of safety, and it is found in most sick bays, though not in the medicine box. A big pinch of soda bicarbonate in one-half tumbler of water, t. i. d., is often of value. It is generally true that when many different medicines are advised for a given condition they are seldom of value and rarely curative.

To summarize, for boils—(a) Cover and protect against squeezing and reinfection.

(b) If extending, get a doctor.

(c) If coming in crops, send the patient to a hospital; get him off the ship.

(d) If hospitalization is impracticable, advise extra cleanliness, change in diet, and give a laxative and perhaps some simple medicine, with plenty of water to drink.

(e) Do not add to his pain unnecessarily.

THINGS AS THEY ARE.

By CHARLES W. CUNO, Ph. D., YANKTON COLLEGE, SOUTH DAKOTA.

Physics may be regarded as a study of forces. Chemistry, its kindred science, is to a great degree a study of matter. Science contents itself with *things as they are*, systematically studying these things in order to search out and discern the laws of nature. The reformer, the socialist, the minister, the philosopher, the statesman,

may begin with the foundation of "things as they should be" and from that build a more or less stable structure, but the scientist can only be successful if he searches out fact after fact, making his generalizations slowly and accepting law and theory with an open mind always ready to abandon such laws and theories when some newly discovered fact makes them untenable.

Because the human body is largely a matter of physical forces and chemical changes, the physician and the student of medicine must of necessity also become apostles of things as they are.

In the study of *forces* the physicist recognizes to-day a variety such as gravity, pressure, heat, electricity, light, chemical change, etc., all in a degree *related*, and, what is most remarkable, all in a measure *interchangeable*. The chemist in a like manner has attempted to measure and classify the properties and characteristics of *matter*. He has discovered, for instance, that all matter may take three physical forms, *solid*, *liquid*, *gaseous* (there are certain exceptions, such as carbon, which has not yet been liquefied, etc.), these forms being dependent upon temperature and pressure. And if the chemist examines matter carefully he notes that whenever he has chemical change he can usually detect changes in temperature or pressure, often there is a marked generation of electricity, and sometimes an incandescence or combustion that produces light. On the other hand, changes in temperature and pressure, the electric current, and sometimes light may produce chemical change. The separation of chemistry and physics is therefore an arbitrary and man-made affair for the purpose of better study and research.

Chemists have found that matter is composed of a variety of substances or *compounds*, and that these compounds can be reduced or divided into *elements* that so far have not been reduced further. Of these elements, about 92 have been isolated and studied. That more elements will be discovered as science progresses is to be expected. Of these 92, only 9 were known to the ancients—carbon, copper, gold, iron, lead, mercury, silver, sulphur, and tin.

Elements (as well as compounds) have varying *characteristics* or *properties*, such as melting point, boiling point, specific gravity, color, luster, crystalline character, malleability, ductility, solubility, etc., and we may sometimes recognize them by these characteristics. More often, however, elements are recognized by their *differing chemical properties*; that is, by their behavior toward or with other known elements or compounds. From this method of recognition we have *qualitative analysis*, or the recognition of substances by their behavior in a systematic procedure involving the known reactions of all the elements, and *quantitative analysis* or the accurate measurement of one or more known reactions of an element in order to de-

termine the quantity present in a given quantity of the unknown substance.

If we decompose water by means of an electric current and carefully collect the gases evolved at each pole we find that we have just twice the volume of hydrogen evolved as that of oxygen. If now we combine two volumes of hydrogen and one of oxygen by means of an electric spark we have water formed with no hydrogen or oxygen left. If, on the other hand, we add a few cubic centimeters more of the oxygen than the required amount and perform the same experiment, just that many cubic centimeters of oxygen will remain after the reaction has ceased. The same thing will happen with hydrogen if we add an excess of that gas. We come very quickly to the conclusion that hydrogen combines with oxygen to form water in the ratio of two volumes of hydrogen to one of oxygen, or as it is written, H_2O . This combining ratio differs with different substances. For instance, one volume of hydrogen combines with one volume of chlorine to make hydrochloric acid, HCl . But when we are dealing with the same substances in the same way the combining ratio is always the same and can always be expressed by small whole numbers, such as 1:1, 1:2, 2:5, etc.

If, instead of measuring the volume of our gases, we weigh them we find that to every 2 grams of hydrogen it will be necessary to use approximately 16 grams of oxygen (the accurate ratio is 2.016 hydrogen to 16 oxygen), and that the water formed weighs 18 grams. The combining ratio of hydrogen and chlorine is 1.008 to 35.5, etc. In like manner combining ratios have been established for all of the known elements using oxygen = 16 as a standard. The use of oxygen as 16 is purely arbitrary and a matter of convenience. Any other element with any other value could be taken and the *relative* value would be the same. It was originally intended to use hydrogen as 1, it being the lightest element. With the then inaccurate methods of measurement, oxygen became 16 and from oxygen many of the other elements were estimated. When we write water as H_2O it means both that two volumes of hydrogen gas and one volume of oxygen gas were combined, and that 2.016 (2 times 1.008) parts by weight of hydrogen were combined with 16 parts by weight of oxygen. Many substances are not gaseous at ordinary temperatures so that usually the law of combining weights is indicated when we write these formulae. Thus $NaCl$ indicates that 23 parts by weight of sodium is combined with 35.5 parts by weight of chlorine; H_2SO_4 indicates that 2 times 1.008 parts by weight of hydrogen, 32 parts by weight of sulphur and 4 times 16 parts by weight of oxygen combine to make sulphuric acid. When this language of chemistry is once learned it becomes no more difficult to read or to understand than any other language.

This law of combining weights (atomic weights) is perhaps the most important single generalization of chemistry. By its means the apparent jumble of chemical phenomena has resolved itself into a beautifully worked out system full of law and order, simple and discernible when once the key is presented.

Soon after this law of combining weights had been accepted, and a number of atomic weights determined, chemists began to compare these weights in an endeavor to discern if possibly any relations between them existed. It was discovered, for instance, that certain elements of similar characteristics might be arranged in groups of threes, or "triads," such as lithium, sodium, and potassium, the atomic weight of sodium, 23, being approximately the mean between lithium, 7, and potassium, 39; or chlorine, bromine, and iodine, bromine, 80, being the approximate mean between chlorine, 35.5, and iodine, 127. The elements of these triads exhibit remarkable similarity to one another in characteristics and chemical action, but not all the elements can be grouped in this fashion. Again these triads do not always include all the members of the natural group. For instance, fluorine, 19, is a member of the halogen family and naturally should be included with chlorine, bromine, and iodine, but the figure 19 does not fit as a mean, extreme, or in any other reasonable proportion with the figures of the other elements.

If we arrange the elements according to their ascending atomic weights, however, we find a gradual change in the properties of each succeeding element for eight elements when there is a sudden reversion in the ninth element to characteristics similar to the first element; the tenth is similar to the second, etc., not so regular in the succeeding progressions as might be hoped for, but regular enough to permit of the arrangement of the elements in a table similar to figure 1.

FIGURE I.
Table of the periodic system.

E^o	$E^I Cl$ $E_2^I O$	$E^{II} Cl_2$ $E^{II} O$	$E^{III} Cl_3$ $E_2^{III} O_3$	$E^{IV} H_4$ $E^{IV} O_2$	$E^{V} H_5$ $E_2^{V} O_5$	$E^{VI} H_2$ $E^{VI} O_3$	E^H $E_2^{VII} O_7$	$E^{VIII} O_4$
He=4 Ne=20.2	Li=7 Na=23	Gl=9 Mg=24.3	B=11 Al=27	C=12 Si=28.3	N=14 P=31	O=16 S=32	F=19 Cl=35.5	.....
A=39.9	K=39 Cu=63.6	Ca=40 Zn=65.4	Sc=44 Ga=70	Ti=48 Ge=72.5 .	V=51 As=75	Cr=52 Se=79.2	Mn=55 Br=80	Fe=56 Co=59 Ni=58.7
Kr=83	Rb=85.4 Ag=108	Sr=87.6 Cd=112.4	Y=89 In=115	Zr=90.6 Sn=119	Cb=93.5 Sb=120	Mo=96 Te=127.5	..... I=127	Ru=101.7 Rh=103 Pd=106.7
Xe=130	Cs=133 Au=197	Ba=137.4 Hg=200.6	La=139 Tl=204	Ce, etc., 140-174 Pb=207	Ta=181.5 Bi=208.5	W=184 .....	..... .....	Os=191 Ir=193 Pt=195
Nt=222.4 .....	.....	Ra=226	.....	Th=232.4	.....	U=238.2	.....	.....

In this table atomic weights are given in round numbers.

Thus Na, sodium, has characteristics very similar to Li, lithium; Mg, magnesium, to that of Gl, glucinum, etc. In the third period the same holds true: K, potassium, has characteristics similar to sodium and lithium; Ca., calcium, to magnesium and glucinum, until we come to Mn, manganese, whose characteristics are not all like that of chlorine or fluorine, in the same column above. In fact, from manganese on, the table shows many irregularities have not as yet been satisfactorily explained.

Still, when viewed thus in a table, the chemical properties of elements show remarkable grouping. The elements in the first column on the left are the comparatively inert elements of the table. The second column shows the strong alkalis, the third the lighter alkalis and bases. Gradually the elements show more acidic character, until in the seventh and eighth columns we have strong acids. Each column has also its own peculiar behavior with hydrogen and oxygen, the quantity of oxygen with which each element combines (valency) increasing from left to right, while that of hydrogen decreases from right to left.

When the periodic tables were first prepared many of the present elements were unknown. Among these were gallium, scandium, germanium. Mendeléeff, the Russian chemist, who prepared the first periodic table, predicted that these three elements would be discovered, and even suggested their chemical and physical properties. A short time afterwards the above-named elements were discovered and they were found to have the properties predicted by Mendeléeff. This, as much as anything else, led to the adoption of Mendeléeff's table. As new elements have been discovered, the table has been rearranged and revised. Figure 1 is one of the most recent revisions of it. None of the elements in the first column were known to Mendeléeff. The triads in the last column do not seem to fit into a logical arrangement. Between lanthanum 139, and cerium, 140, a round dozen or so of the rare earth elements seem to find place. In fact, every new discovery seems more to confuse than to straighten out the difficult places in the table. Because of these imperfections many chemists are attempting to modify the periodic system. New schemes and theories appear frequently in chemical literature. The subject is a live one to-day, and one in which all chemists are interested. Because of this interest and the new light thrown upon the whole discussion by recent discovery in radioactive elements, I will review some of the more plausible and acceptable arrangements and hypotheses in my next article.

TROOP TRANSPORTATION.

AS SEEN FROM THE SICK BAY.

By R. M. DUMPHY, Pharmacist (T), U. S. Navy.

From the time the troops embark until they are landed on foreign soil there are numerous routine reports and many occurrences which are common to all transports, but in addition there are those which are peculiar only to the individual troop ship in question.

Before starting on the eastern voyage a thorough examination is made of the embarking troops as they come aboard—the diseased men are weeded out and returned to the port medical authorities for disposition and a detailed report of the condition of troops is submitted to the port liaison officer by the transport surgeon. At the nearest possible time after the troops have passed aboard a meeting of all Army medical officers is called by the transport surgeon and each is given a copy of "Instructions for Army Medical Officers Embarked on the U. S. S. ———," the contents of which are as follows:

U. S. S. ———.

INSTRUCTION FOR ARMY MEDICAL OFFICERS EMBARKED ON THE U. S. S. ———.

The following instructions have been prepared for the guidance of Army medical officers embarked on the U. S. S. ———.

They are the result of experience and strict attention to the details mentioned will facilitate the care of the sick, expedite the transfer of patients and their effects, and prevent confusion in the duties of the Army and Navy medical organizations.

1. The senior medical officer embarking with troops will make all possible provision that no case of contagious or active venereal disease boards transport, and that the requirements of C. O. No. 20, headquarters, port of embarkation, Hoboken, N. J., are complied with. C. C. F. letter of November 17, 1917.

2. The senior medical officer present with troops will notify all medical officers attached to each organization that it is their duty to be present at sick call morning and evening and that they will present themselves promptly at the time set by the ship's surgeon.

3. Army sick call will be held by Army medical officers in the surgeon's office at 7.30 a. m. and 3 p. m., or at such other hours as may be decided upon as most convenient.

4. There will be an Army medical officer of the day, who will promptly answer all sick calls from the troops and leave his name and room number at the ship's surgeon's office.

5. Members of the Army Hospital Corps will be detailed by the senior medical officer to assist at sick call and to attend to the transfer of patients and their effects to the hospital.

6. A member of the Army Hospital Corps familiar with Army forms will be detailed by the senior medical officer to the ship's surgeon's office.

7. Whenever a soldier is sick in his bunk and unable to walk he shall be brought to the sick bay for examination by the Army hospital corpsmen detailed for that work.

8. Prescriptions written by Army medical officers will be filled at the dispensary by a Navy hospital corpsman assigned to that duty.

9. Upon being admitted to the ship's hospital for treatment, an officer or enlisted man of the Army comes under the direct charge of the Navy medical officers and hospital corpsmen.

10. When a patient is transferred to the care of the senior medical officer of the transport for hospital treatment the following papers properly and completely executed must accompany him:

A. Form 52 M. D., U. S. A. Duplicate.

B. Service record properly endorsed.

11. The Army medical officer shall either see that the effects (except accounts) of patients are secured and sent to the ship's hospital or have the same attended to by the company commander. These effects should be neatly done up and tagged with name, rank, organization, and list of additional articles. Tags will be furnished by the ship's dispensary.

12. The company commander will then be notified that the man has been admitted to the ship's hospital and that his service record is to be transferred to the custody of the ship's medical officer for further transfer, if necessary. On a hospital ashore or return to the company commander should the man be returned to duty with his company.

SANITARY DUTIES.

13. The senior Army medical officer shall detail a medical officer to act as sanitary officer.

14. Sanitary inspection will be made twice a day by Army medical officer. C. C. F. letter of November 17, 1917.

15. Whenever practicable, weather and other circumstances permitting, the troop spaces will be vacated twice a day for aeration by opening all available ports and hatches. During at least one of these periods the men will take their blankets on deck for airing.

16. A sanitary squad under the supervision of a noncommissioned officer will be on duty at all times in each latrine assigned to troops. Instructions will be issued whom to notify immediately in case of failure of the flushing system of latrines. All wooden seats of the latrines will be scrubbed daily with lye and treated with steam if practicable. The sanitary squad will also be responsible for the care and cleanliness of the shower baths and wash rooms assigned to troops. C. C. F. letter 17 November, 1917.

17. A sanitary squad of four or more men under the supervision of a noncommissioned officer will be detailed to spray troops' compartments.

18. Regulations require that troop decks shall be sprinkled, swept, and mopped with disinfecting solution three times a day with a field day once a week. C. C. F. 17 November, 1917.

19. The solution and cans for spraying will be furnished by ship's dispensary.

20. All swabs used between decks will be thoroughly cleansed and treated with a disinfecting solution three times a day. C. C. F. letter 17 November, 1917.

Approved:

U. V. W.,

Lieut. Commander, U. S. N., Executive Officer.

X. Y. Z.,

Medical Officer.

The contents of the above instructions are reviewed carefully and explained, upon request, at any point. The troop surgeon is in

pressed with the fact that he is responsible for the health, comfort, and care of his men until after they have been admitted to the ship's sick bay.

In order that every man on board may be sure to have his day's ration and plenty of fresh air, certain hours in the day have been set by the executive officer of this vessel when all hands must be out of the holds and up on deck as this has been found to be the best possible cure and prevention for seasickness.

An Army policing squad is assigned to each troop compartment under the supervision of a noncommissioned officer and these squads are ordered to keep all troop spaces clean in every respect, this includes the swabbing of decks twice a day with a cresol solution and a thorough spraying of all troop spaces with a 2 per cent cresol solution under direct supervision of the troop sanitary officer, who is appointed by the troop surgeon. Absolute cleanliness is maintained only by frequent sanitary inspection of the quarters.

Among the reports that are to be prepared and submitted to the proper authorities upon arrival at the port of debarkation, there are as follows:

1. Report of Army Medical Corps personnel aboard, to base surgeon, giving name, rank, and organization to which they are attached. This must be submitted in triplicate.
2. Complete report of venereal diseases among the debarking troops, giving name, rank, and organization along with the nature of disease. (Duplicate.)
3. The number of men in each organization embarked, who have not received typhoid and paratyphoid injections and smallpox vaccination is reported to the base surgeon in triplicate, giving name, rank, and organization of each.
4. Report to base surgeon of patients to be transferred to hospitals ashore, including contagious and infectious cases under separate heading, in duplicate.
5. Any venereal infection among the ship's crew must be reported upon arrival to the base surgeon, in duplicate giving the number and nature of each disease.
6. A sanitary report is required by all port sanitary officers, signed by the commanding officer of the vessel.

After the various reports have been received by the medical boarding officer and the port sanitary authorities have inspected the vessel, a "clearance" is issued to the commanding officer of the troopship and it is then permitted to dock.

The next consideration is the disposition of the Army patients that have been transferred to the ship's sick bay for treatment. In some ports, Form 52 M. D. U. S. A. transfer card is required and in one of the ports that this vessel has visited they were refused as unnecessary. Service records of men to be transferred are required from ship's surgeon in some ports and these are to be properly indorsed by him to the Adjutant General, American Expeditionary Force. Although medical history sheets are not required by surgeons at

ports of debarkation, the medical department of this vessel has forwarded a medical history sheet with every Army man transferred to a base hospital ashore. In accordance with Bureau of Medicine and Surgery letter No. 125135-0:1, of July 29, 1918, a copy of medical history sheet on all supernumeraries shall be forwarded to the bureau. Contagious and noncontagious cases are of course sent to different hospitals or rest camps.

After the troops have disembarked and all Army patients have been transferred ashore, the thorough cleaning of isolation ward and sick bay is started and isolation wards are fumigated. Inventory of stores is started preparatory to placing requisitions upon arrival in the United States, and statistics on Army sick are prepared for report to Bureau of Medicine and Surgery and to the commander of Cruiser Force, United States Atlantic Fleet, upon arrival in a home port.

Some time before starting the westward voyage, the Army sick and wounded, for transportation to the United States, are brought aboard accompanied by proper transfer cards and transportation papers. The Hospital Corps is detailed for care of the patients according to necessity of the cases.

School is held daily on the return trip for the members of the Hospital Corps. Medical officers, pharmacist and chief pharmacian are the instructors. Among the subjects taught are those treated in Handy Book for Hospital Corps, laboratory procedure and practical pharmacy. This has proved of great value to the men in their routine duties about the sick bay and in preparing them for examinations for the next higher ratings. It is not only a privilege to the individual corpsmen but the instruction is considered necessary for the proper care of the sick and the effective administration of the Hospital Corps.

At some period during the trip it is necessary to prepare monthly reports—Form K, Form F (smooth), monthly sanitary report for the commander Cruiser Force, United States Atlantic Fleet, report of deceased soldiers on board and statistical report of Army sick for the Bureau of Medicine and Surgery.

Before arrival at a home port transfer cards and medical history sheets must be prepared for the proper transfer of Army patients to hospital ashore. The following are required:

- (a) Form 52 M. D. U. S. A. (in duplicate).
- (b) Medical history sheet.
- (c) Records brought aboard with patients for transfer.

In addition to the above, Form F (Navy) cards are made out on all Army or civilian patients admitted to the sick bay. Each patient must be properly tagged, giving name, rank, organization

diagnosis, and hospital to which patient is to be transferred, before leaving the care of the transport surgeon.

It is to be understood, of course that there are several of the routine reports that have not been mentioned in the above article but this may be explained by the fact that those omitted have no direct bearing on the question of troop transportation.

FIRST AID.

The following general rules for applying first aid are taught at the Hospital Corps School, Naval Operating Base, Hampton Roads, Va. A book entitled, "The Treatment of Emergencies" by Hubley R. Owen, M. D., W. B. Saunders Co., Philadelphia, Pa., with its 249 illustrations is one that will interest any hospital corpsman studying first aid.

1. Do not become excited—calmness on your part reassures the patient.
2. Give the most necessary treatment, first.
3. Cut, tear, or remove clothing where it constricts or impedes circulation.
4. Give yourself as much room as possible in which to work.
5. Control arterial hemorrhage with digital pressure until you can determine what to use as a tourniquet and where to apply it.
6. Keep the patient warm using blankets, hot water bottles or friction.
7. Always consider the possibility of *shock*. Prevent it by keeping the patient warm, as free from pain as possible and in a reclining position, with head lowered.
8. If shock is present and the patient is not breathing begin artificial respiration and continue until you are exhausted or until some one comes to relieve you.
9. Give the patient nothing by mouth unless he is conscious and able to swallow.
10. Keep your fingers, instruments, and everything else out of wounds. Cover all wounds with sterile dressings, or clean cloths. No dressing at all is better than a dirty one.
11. Never try to forcibly set a broken bone. Reduce the deformity enough to admit of splinting and transportation if you can do so without using force and causing pain; otherwise splint as well as possible and keep patient quiet and comfortable till help arrives.
12. Never under any circumstances attempt to set a compound fracture.

13. In severe scalds and burns do not attempt to remove patient's clothing.

14. In cases of submersion, or apparent drowning, clear patient's throat, nose, and lungs first.

15. Never leave your patient until he has been turned over to doctor or is able to walk away unaided.

16. The object of first-aid treatment is to:

- (1) Save life.
- (2) Conserve health.
- (3) Prevent extension of injury.
- (4) Relieve pain.
- (5) Prevent or relieve fear and anxiety on the part of the patient.

GERMAN "CHEMICAL" FRIGHTFULNESS.

HISTORY OF ONE OF THE FIRST GASES USED IN THE WAR.

By P. F. DICKENS, Lieutenant, Med. Corps, U. S. Navy.

The writer will not attempt to "turn backwards in the history of mankind, back to the commencement of historic documents and positive descriptions, and stop when the ancient legends no longer permit true history to become apparent," as Molinari does in his chapter on the history of chemistry, but to merely correlate some of the facts of the history of chlorine for the hospital corpsman.

CHLORINE.

Chlorine is a gas which was discovered by Scheele in 1774, but its elementary character was first established by Davy in 1801, who gave it the name of chlorine from the Greek word *chloros*, which means green, on account of its greenish-yellow color. By reason of its origin, from hydrochloric acid, Scheele called the new substance dephlogisticated muriatic acid, as it was supposed to represent hydrochloric acid free from phlogiston. It was about the time of the discovery of chlorine that the "phlogiston hypothesis" of Stahl was beginning to decline. The phlogiston, or combustion, era in chemistry, commenced with Hooke, the inventor of the pocket watch in 1635, and Mayhow, a pupil of Boyle, 1645. It remained unassailed until attacked by Black in 1755, and later Cavendish, Priestly, Davy, and Lavoisier ushered in the beginning of modern chemistry by their various discoveries. The phlogiston theory was finally abandoned, after Lavoisier in the years 1772-1781 devoted himself to the study of combustion and came to the conclusion that the phlogiston

theory of Stahl was completely erroneous. During this time Lavoisier investigated the character of air, and the discovery of oxygen is ordinarily attributed to him. In 1781 he discovered the composition of water, and thus phlogiston, the hypothetical element of Stahl, was finally cast aside. This, then, was the beginning of the study of modern chemistry, even though occurring in the eighteenth century, and is inserted here on account of the fact that the phlogiston theory played such an important part in chemistry during the era in which chlorine was discovered.

The very first thing we find in the study of chlorine is that it is never found free in nature, but is found abundantly in sea water and in the rock salt in mines in Austria and Bavaria, which have been a source of this gas for centuries. Secondly, we find that it does not obey the laws of Boyle and Gay Lussac, or, one should say, that its density is greater than the amount calculated when the pressure is increased or the temperature is diminished.

Although not found free in nature, chlorine combines with most all of the elements except oxygen and nitrogen and some of the rarer gases. Chlorine is generally considered, as are all the halogens, to be monovalent, but in certain compounds chlorine is not monovalent but polyvalent, i. e., is ClO_2 . Then the chlorine ion of the soluble chlorides combines readily with the silver ions of AgNO_3 , forming the characteristic gelatinous, white precipitate of silver chloride, which is soluble in ammonia. (Witness the usual test for chlorides in water.)

Chlorine does not burn in air but burns in an atmosphere of hydrogen, in which it is a combustible substance. A candle when lowered into a cylinder containing chlorine will continue to burn. Also a piece of phosphorus immersed in a flask of chlorine first melts and then bursts into flame, giving out a bright light and depositing PCl_5 , phosphorus pentachloride, as a white powder.

We may now follow the uses of chlorine as a bleaching agent in the textile industry, an antiseptic, and as an implement in modern warfare.

Chlorine is used so largely in the arts that its manufacture is one of the great industries of England, France, and Germany, and, as usual in such industries, great ingenuity has been used to cheapen its production. In order to be able to use chlorine for bleaching vegetable textiles—cotton, paper, etc.—and in preparing wool for printing it was necessary to obtain it in a convenient form for handling either as a solid or as a compressed or liquid gas in cylinders. It is also used for the preparation of chlorinated organic compounds, such as chloroform, chloral, etc.; and, remember, the Germans are using chlorine in their gas attacks in the form of phosgene, COCl_2 .

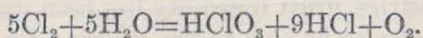
Although the uses of chlorine from the medical point of view are not nearly as many as from the commercial, still there are a few of real importance, such as antiseptics and disinfectants.

Calcium hypochlorite, $\text{Ca}(\text{OCl})_2$, is prepared in a state of purity with great difficulty. The first use of hypochlorites was probably in "Eau de Javelle," which is a solution of potassium hypochlorite, KClO , and is known only in solution. But experiments have demonstrated that Labarraque's solution (solution of chlorinated soda) is more satisfactory than Eau de Javelle (Javelle water), which has fallen into disuse. The hospital corpsman should notice that these two solutions are called solutions of chlorinated potassa (Javelle water) and solution of chlorinated soda (Labarraque's solution), in order to emphasize clearly the uncertainty of their chemical character.

One of the most well-known preparations of chlorine is Calx Chlorinata, United States Pharmacopœia, or chlorinated lime, bleaching powder, etc. This chemical compound is one of the few whose composition is in dispute between chemists, and its exact chemical formula is yet to be established. It is extensively used, though, as a disinfectant, and at one time an attempt was made to use it free. In the "chlorine saucer method" of disinfecting a room an equal quantity of sodium chloride and black manganese oxide were placed in a saucer and diluted sulphuric acid poured over it, in which chlorine is slowly liberated for several days.

Wood charcoal absorbs as much as 200 volumes of this gas, with the evolution of 6,780 calories for each 35.5 grams of chlorine absorbed, and, by the way, the atomic weight of this gas is given as 35.5 (35.46). This fact may be used as an aid to memory. In 1792 Tennent found that burnt lime absorbed as much as 30 to 40 per cent of its weight of chlorine.

We think of disinfectants generally as oxidizing agents; therefore, chlorine is interesting on account of the fact that it is not of itself a complete oxidizing substance. According to the laws of chemistry to be an oxidizing agent a body should contain oxygen which it can release. This, of course, is not true of chlorine, but this element has the happy faculty of borrowing oxygen from water and then releasing it, according to the formula:



Therefore, we come to the conclusion that chlorine is not a good antiseptic to use except when lightly combined in solution and in the presence of water. Dakin's solution is an ideal combination of all the above.

The hospital corpsman can make this solution on board any ship in the Navy by closely following the outline of charts 1, 2, and 3, and credit for arranging these charts should go to Raymond Watson.

TESTING DAKIN'S SOLUTION FOR STRENGTH AND ALKALINITY

Measure exactly 10 mls. of the solution into a beaker containing approximately 50 mls. of distilled water. Add two mls. of either gallic acid or tannic acid and 10 mls. of 10% Potassium iodide solution. Then cautiously run in from a buret 10% Sodium thiosulfate solution to complete decolorization using starch test solution. Note the end reaction.

Let x represent the percent of Sodium Hypochlorite sought and n the number of mls. of 10% $\text{Na}_2\text{S}_2\text{O}_3$ required and solve the following for the number of grams of NaOCl in 100 grams of the solution, or it may be termed the percent of Sodium Hypochlorite in the solution.

To test for alkalinity, put 10 mls. of the solution in a small beaker and add a few milligrams of phenolphthalein.

No color change should be noted. If alkaline a red color will appear and disappear due to the bleaching power of chlorine.

If the solution contains too much (more than 5%) NaOCl it can be diluted with water.

If it be necessary it can be neutralized with H_2SO_4 as in Chart 3.

The reactions in the procedure are the same as in Chart 3.

in place of (3).

or use these —

1. $\text{Cl}_2 + 2\text{NaOH} \rightarrow \text{NaOCl} + \text{NaCl} + \text{H}_2\text{O}$

2. $\text{HClO} + \text{H}_2\text{O} \rightarrow \text{H}^+ + \text{ClO}^-$

3. $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HClO} + \text{HCl}$

4. $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HClO} + \text{HCl}$

A close number of the four reactions will make the

$\text{NaOCl} + \text{HCl} \rightarrow \text{NaCl} + \text{HClO}$

$\text{NaOCl} + \text{H}_2\text{SO}_4 \rightarrow \text{NaHSO}_4 + \text{HClO}$

$\text{NaOCl} + \text{H}_2\text{SO}_4 \rightarrow \text{NaHSO}_4 + \text{HClO}$

$\text{NaOCl} + \text{H}_2\text{SO}_4 \rightarrow \text{NaHSO}_4 + \text{HClO}$

Since the molecular weight of NaOCl is 74.44 and it is 100% pure, the

in 100 grams of solution will be 74.44 grams of NaOCl .

NaOCl which is

CHART 3

Plate 3.

Pharmacist (T), U. S. N., instructor in pharmacy at the Hospital Corps Training School, Hampton Roads, Va.

According to Molinari liquid chlorine was used in large quantities at Strassfurt for the preparation of 500,000 kilos of bromine annually, and the Badische Anilin und Soda Fabrik at Ludwigshafen in 1900 used more than a million kilos for the production of chloracetic acid, which is used in the synthetic preparation of artificial indigo. Being quite familiar with the properties of chlorine, and probably having a large quantity on hand, when one stops to think that before the war chlorine was beginning to be a "too abundant" by-product from the manufacture of caustic soda and potash by the electrolytic method, one need not wonder why the German chemists recommended the use of this gas in warfare to the military authorities.

In spite of chlorine being a supporter of combustion and an oxidizing agent chlorine is irrespirable, and is quite unable to replace oxygen in our organism. When inhaled, even in small quantities, it attacks the lungs, causing coughing and spitting of blood. It does not act as a poison on the heart, but paralyzes the respiratory centers. Air containing one millionth part is said to be harmful to man. However, thanks to the gas mask, this effect now rarely takes place.

Being nearly two and one-half times heavier than air, it may be easily released from cylinders, and having a favorable wind to carry it along, it slowly rolls into the enemy's trenches. Since the trenches are so frequently filled with water, who knows but that chlorine in combination with water, with the aid of sunlight, will form hydrochloric acid, be it ever so diluted, in which the soldier must stand.

In conclusion let us note that chlorine has been brought to the attention of the world at large since its use in this war by the chemists of France and Germany, but with this difference: French chemists used it as an antiseptic to aid humanity; German chemists, in gas attacks, to destroy life.¹

THE STUDY OF PHARMACY AND CHEMISTRY IN THE NAVY.

By L. C. SIMS, Lieutenant (T) Med. Corps, U. S. Navy.

A number of years ago, when very few of the Navy hospital corpsmen received the benefit of a course in a Hospital Corps School and when instruction in the hospital was the exception rather than the rule, an amusing occurrence happened at one of our naval hospitals. The doctor made sick call and ordered the apprentice standing by to give an opium suppository to an old salt. The apprentice, who was

¹The writer has consulted freely the following works in assembling the material for this article: Principles of Pharmacy, Army; General and Industrial Chemistry, Molinari; Medical Chemistry and Toxicology, Holland; Pharmaceutical and Medical Chemistry, Sadler and Coblentz.

a recruit with only a few weeks' service to his credit went to the dispensary after sick call and returned with a suppository given him by the dispensary man. Handing it to the patient with a glass of water he ordered tersely, "Here take this." The patient eyed the suppository and asked aggrievedly, "What do you think I am, a what?" The apprentice impatiently replied, "You take it and don't ask me about it—doctor's orders." About that time the first-class apprentice in charge of the ward appeared on the scene in time to prevent a catastrophe or—a fight.

Of course, such blunders could not occur to-day and would not have occurred then had the apprentice had the benefit of a course of training in a Hospital Corps School. Nevertheless, even during the six months' course, the average apprentice is not able to assimilate the very thorough knowledge of pharmacy, together with all the other subjects which must be covered in this short time.

As long as he is satisfied to hold down a lower rating and to remain under the constant supervision of a nurse or better qualified corpsman, he can "get by" very nicely with the knowledge gained in school, but when he desires promotion he must study, and the higher he aspires to advance in the corps the more time he must devote to pharmacy and chemistry.

Our naval hospitals and schools have well-equipped laboratories, dispensaries, and libraries sufficient to enable the student to become a proficient practical pharmacist and chemist if he has the desire to study and the ability to learn. On board ship these studies are taken up under difficulties, and the purpose of this article is to endeavor to guide the corpsman in outlining a course of study and to indicate the way in which the studies should be taken up.

All battleships, destroyers, cruisers, and transports are all provided with the following books on the subjects: Practice of Pharmacy, U. S. Dispensary, U. S. Pharmacopœia, the National Formulary, Manual of Chemistry, Food Analysis, and a work on bacteriology. All dispensaries contain a sufficient equipment for a great deal of practical work in pharmacy. The test case which is carried on every medical department supply table is a fairly complete miniature laboratory. With the test case comes a pamphlet called "Manual to Accompany the Naval Test Case." This book is also worth a careful study. It tells you how to prepare volumetric solutions and reagents and gives working directions in simple language for many practical tests, such as water analysis, urinalysis, examination of feces, stomach contents, blood, etc.

It is believed that the chief pharmacist's mate and the medical officer will be both willing and glad to spend an hour or so each day in instructing hospital corpsmen in pharmacy if the corpsman

show a desire to learn. Thus you have at hand the material and means for taking up the study of pharmacy and chemistry in a thorough, comprehensive manner. Do not hope to become a pharmacist or a chemist by glancing at a book on the subject a few minutes daily. It will take you at least three years to gain a knowledge comparable to that gained after a two-year course in a standard school of pharmacy. It will be time well spent, however, and, while it may disturb many pleasant hours' "calk off" and take the place of hundreds of thrilling games of "acey ducey," it is a much better investment. You will also gain by experience and study along other than pharmaceutical lines a knowledge of the allied arts and sciences which are not given in schools of pharmacy, and which will be of incalculable value to you, regardless of the profession you may follow later.

The National Committee on Pharmacy publishes a syllabus of the course of instruction in pharmacy to be followed by the various standard pharmaceutical colleges and by State boards in examining candidates for registration. The following outline of the minimum course required for students of pharmacy is taken from the syllabus:

Detailed assignment of hours by branches.

	First year.	Second year.	Total hours.
Branch I, materia medica, subdivided as follows.....	200	200	400
Physiology.....	50		50
General principles of materia medica.....	10	15	25
Pharmaceutical botany.....			
Vegetable histology.....	65		65
Macroscopical.....	60		60
Poisonology and toxicology.....	15	25	40
Pharmaco- and therapy dynamics.....		70	70
Pharmacognosy.....		90	90
Branch II, chemistry, subdivided as follows.....	200	200	400
Elementary physics.....	25		25
General inorganic.....	75		75
Qualitative.....	50	25	75
Manufacturing.....	50	25	75
Quantitative.....		50	50
Drug assaying.....		50	50
Branch III, pharmacy, subdivided as follows.....	195	205	400
Pharmaceutical arithmetic.....	30		30
Pharmaceutical Latin.....	25		25
Theory of pharmacy.....	60		60
Laboratory practice.....	20		20
Manufacturing pharmacy.....	60	60	120
Pharmaceutical jurisprudence.....		10	10
Dispensing pharmacy.....		60	60
Commercial pharmacy.....		75	75

Of the hours above allotted, it recommends that each college require at least 1,200 hours of instruction, of which at least 500 hours shall be spent in lectures and recitations.

It will be somewhat difficult for the average hospital corpsman to follow the above outline, and some of the subjects are more or less

superfluous to the man who intends studying for advancement in the Navy. For instance, the first subject listed under materia medica (physiology) can be omitted from the hospital corpsman's proper course, for the reason that each hospital corpsman spends a much greater period of time in the study of physiology as a part of his instruction in general hospital duties than is required in the outline of the syllabus. The study of commercial pharmacy, while doubtless important for civilian pharmacists, is of relatively little value to a Navy man; moreover, it is considered that this branch of study should be taken up at a later period should the hospital corpsman desire to pursue the profession in civil life.

Less time should be spent on the study of botany and pharmacognosy by the average Navy student than is outlined in the syllabus for the reason that crude drugs are little used in the Navy and there are few opportunities to study the plant and crude drug macroscopically, practically nil on board ship. This study should receive attention after the hospital corpsman has perfected himself along other pharmaceutical lines.

Hospital corpsmen will not have the opportunity for the practical manufacture of pharmaceuticals that the pharmacist in civil life has and should avail himself of the opportunity, if it ever offers, of working in a manufacturing laboratory or taking a special course in this important work in a college of pharmacy.

In view of the above there is here submitted a tentative course for hospital corpsmen, covering a period of four years, taking into consideration the fact that for long periods they will have no instruction and that they can devote less time per year to the study of pharmacy than can the students in a school of pharmacy. If such a course were followed conscientiously for the entire term of enlistment, a man would be fully qualified to pass any examination in the Navy for the grade of pharmacist and could successfully pass any State board of pharmacy if the time ever comes when hospital corpsmen are given credit for their time spent in the service of their country by State boards, and there is no valid reason why a State board should not allow credit for time spent in the Navy Hospital Corps, at least to the extent of permitting the registration of hospital corpsmen with honorable discharges who are able to pass the required examination.

Several of the best pharmaceutical schools are taking an interest in the work of the hospital corps to the extent of giving instruction in these schools to classes of hospital corpsmen. It is hoped the time will come when a hospital corpsman will be given credit toward a degree by schools of pharmacy if the candidate for advanced standing can demonstrate to the satisfaction of the faculty that he has pursued the study of pharmacy during his four years of service.

The following outline may be criticized as being too comprehensive and requiring too long a time, but in order to take up either study with a view of becoming a proficient chemist or pharmacist, it is necessary to pay the price. It is presupposed that the student will take advantage of any special course of instruction which may offer during his cruise. The constant use of notebooks and daily practice in writing out the exercises studied is essential. Daily talks on the subject with other members of the corps will do much to aid the memory and keep up interest. Whenever you are detailed to work in the dispensary, make the most of your opportunity for practice.

If there is a graduate pharmacist or chemist among young shipmates, persuade him to give you a daily lecture period.

It will be noted that chemistry is made the major study in the following outline; the reasons for this are many. The art of pharmacy is limited to the "study of theories and exercise of the operations necessary to the intelligent preparing and dispensing of substances used in the healing art."

Chemistry is the science of changes of matter. It has no limits, and is applicable to practically every known substance and to nearly every vocation.

The field of the pharmacist has become narrower in scope, due in part to the change in methods of treating disease and to the modern methods of preparing medicinal substances in large quantities ready for dispensing by large pharmaceutical houses.

As you all know, the science of chemistry is becoming more important and broader in scope every day, and underlies all real advance in the industrial arts.

The true art of pharmacy, as practiced in the Navy, is relatively unimportant although it is highly necessary that the efficient hospital corpsman know the theory of pharmacy, materia medica, and toxicology, and be capable of compounding and dispensing any of the preparations in the pharmacopoeia, but the naval pharmacist, as such, has little need for pharmacognosy, commercial pharmacy, and botany, and has little opportunity to study these branches.

The two studies added in the outline given are biological chemistry and preventive medicine. Biochemistry and bacteriology are of great importance to the hospital corpsman and both are fascinating studies.

A knowledge of preventive medicine is probably of more value to the hospital corpsman than any other single subject. Modern medicine is as much concerned with the prevention of disease as with the treatment of disease. The time will come when a pharmacist will be required to spend a great deal of time on this study, for it is as much a branch of pharmacy as it is of medicine.

Subject.	First year.	Second year.	Third year.	Fourth year.
Pharmacy:	<i>Hours.</i>	<i>Hours.</i>	<i>Hours.</i>	<i>Hours.</i>
Pharmaceutical arithmetic.....	25			
Theory of pharmacy.....	100	25	20	
Pharmaceutical Latin.....	25	15		
Manufacturing pharmacy.....		25	25	50
Jurisprudence.....			10	
Laboratory practice and dispensing.....	50	100	120	100
Total.....	200	225	175	150
Chemistry:				
Physics.....	50			
Inorganic chemistry.....	100	50	25	
Qualitative analysis.....	25	25	25	
Organic chemistry.....		25	50	
Quantitative analysis.....			50	50
Biochemistry and bacteriology.....		50	50	50
Laboratory practice.....	50	50	50	150
Total.....	225	250	250	200
Materia medica:				
Principles of materia medica.....	25			
Posology and toxicology.....	50	50	25	
Botany.....	50			
Pharmacognosy.....			25	
Pharmacodynamics.....		50	25	
Preventive medicine.....		25	25	50
Special study and experiment.....			25	100
Total.....	125	125	125	150

Subjects and References.

PHARMACY.

Pharmaceutical arithmetic.....
 Review of arithmetic: Fractions, decimals, percentage, ratio, proportion, alligation.

Pharmaceutical arithmetic in Part I Arny's Practice of Pharmacy.

Texts and references:

1. Arny's Practice of Pharmacy.
2. Arithmetic (obtainable from ship's library).
3. Remington's Practice of Pharmacy.

Theory of Pharmacy.....

Study of Arny's Practice of Pharmacy, part I.

Texts and references:

1. Arny's Practice of Pharmacy.
2. Remington's Practice of Pharmacy.
3. United States Dispensatory.

Pharmaceutical Latin.....

Texts and references:

1. Latin Grammar.
2. Arny's Practice of Pharmacy, part VI to page 947.
3. Medical Dictionary.

Manufacturing pharmacy.....

The actual preparation of the following:

Granular salts.—Infusions.—Decoctions.—Mucilages.—Syrups.—Elixirs.—Tinctures.—Fluid extracts.—Extracts.—Spirits.—Oleo-resins.—Oleates.—Resins.—Iron salts.—Mercury salts.—Mixtures.—Emulsions.—Glycerites.—Honeys.—Liquors.—Wines.—Acids dilute.—Vinegars.—Liniments.—Collodions.—Ointments.—Cerates.—Plasters.—Masses.—Confections.—Pills.—Powders.—Suppositories.—Extracts.

Manufacturing pharmacy—Continued.

Texts and references:

1. Army's Practice of Pharmacy.
2. Pharmacopoeia.
3. National Formulary.
4. Dispensary.

Hours.
10

Pharmaceutical jurisprudence

- A study of pharmaceutical legislation, food and drug acts.
Ethical relations between doctor and druggist.

Texts and references:

1. Army's Pharmacy.
2. Various medical and drug journals.

Laboratory practice and dispensing

Dispensary and stock room arrangement, utensils, names, and care of.

Prescriptions: Checking.—Filing.—Filling.

Incompatibility: Physical.—Chemical.—Therapeutic.

Solutions.—Mixtures.—Emulsions.—Pills.—Capsules.—Powders.—

Cachets.—Tablets.—Ointments.—Plasters.—Suppositories.—

Weighing and measuring.—Care of apparatus.—Specific gravity and specific volume determinations.—Heat and regulation of temperature.—Heat of absorption.—Heat of hydration.—Heat of solution.—Sublimation.—Distillation.—Melting and boiling points.—Percolation.

CHEMISTRY.

Chemistry 825
Physics 50

Elementary physics.

Physical laws.

Texts and references:

1. Any elementary textbook on physics.
2. Simon's Chemistry.
3. Army's Practice of Pharmacy, Part I.

Inorganic chemistry

Laws.—Symbols.—Valence.—Atomic weights.—Periodicity.—Chemical equations.—Elements.—Compounds

Texts and references:

1. Simon's Chemistry.
2. Army's Pharmacy.
3. Hospital Corps Handy Book.
4. Any good textbook on general chemistry.

Qualitative analysis

Reagents.

Utensils.

Tests for various elements in compounds, urinalysis, water analysis, food analysis.

Texts and references:

1. Army's Pharmacy.
2. Pharmacopoeia.
3. Simon's Chemistry.
4. Stitt's Bacteriology.
5. Food analysis.
6. Dispensary.
7. Memoranda with test case.
8. Holland's Medical Chemistry and Toxicology.

Organic chemistry-----

The carbon compounds:

Structural and empirical formulæ.—Aliphatic compounds.
Benzene derivatives.—Organic acids.—Esters.—Ketones.
Amido and Amino compounds.—Aldehydes.—Alcohols.
Ethers.—Soaps.—Alkaloids.—Glucosides, etc.

Texts and references:

1. Arny's Pharmacy.
2. U. S. Dispensatory.
3. Pharmacopœia.
4. Food Analysis.
5. Simon's Chemistry.
6. Holland's Medical Chemistry.
7. Special books on organic chemistry.

Quantitative analysis-----

Gravimetric.

Volumetric.

Gasometric.

Texts and references:

1. Arny's Practice of Pharmacy.
2. Stitt's Bacteriology.
3. Pharmacopœia.
4. Simon's Chemistry.
5. Memoranda with test case.
6. Special tests on the subject.

Bio-chemistry and bacteriology-----

Chemistry of the body tissues and secretions; includes a study of bacteria and staining methods. Wassermann, Emery, Noguchi, Agglutination tests, etc. Serum diagnosis. Opsonins, Lysins, etc.

Texts and references:

1. Stitt's Bacteriology.
2. Simon's Chemistry.
3. Holland's Medical Chemistry.

MATERIA MEDICA.**Materia medica**-----

Classification of medicines.

Action of various drugs on the human body.

Administration of medicine.

Action of drugs as modified by disease.

Medical definitions.

Rate of excretion of drugs.

Cumulative action.

Texts and references:

1. Arny's Practice of Pharmacy.
2. Pharmacopœia.
3. Dispensatory.
4. Materia medica and toxicology (Bastedo).

Posology and toxicology-----

Doses of all drugs and curative agents.

Poisons and antidotes.

Posology and toxicology—Continued.

Maximum dosage of various drugs.—Idiosyncrasies.

Texts and references:

1. Pharmacopoeia.
2. Arny's Practice of Pharmacy.
3. Dispensatory.
4. Bastedo's materia medica and toxicology.

Hours.

50

Botany

A study of growth, structure and classification of plants.

Texts and references:

1. Arny's Pharmacy.
2. Pharmacopoeia.
3. Dispensatory.
4. Text book on botany.

Pharmacognosy

25

Commercial sources of drugs.

Descriptions of crude drugs.

Identifications.

Habitat—appearance—studies of crude drugs, macroscopically and microscopically.

Preservation.

Determination of quality and impurities.

Purity Rubric.

Texts and references:

1. Pharmacopoeia.
2. Arny's Pharmacy.
3. Dispensatory.

Full justice can not be done to any of the above subjects by study from text books only. The study should be taken up in a college or in a well-equipped laboratory when the opportunity offers. There are for sale cabinets of crude drug specimens containing hundreds of specimens which can be procured for a few dollars if the student desires to go into the study thoroughly. These cases answer the purpose well for the study of crude drugs.

Hours.

75

Pharmaco- and therapy dynamics

Action of drugs, organic and inorganic, on the human organs.

Texts and references:

1. Materia medica (any text).
2. Pharmacopoeia.
3. Dispensatory.
4. Osler's Practice of Medicine.
5. Physiology (any good text).
6. Pryor's Naval Hygiene.
7. Hospital Corps Handy Book.

Preventive medicine

100

A study of hygienic measures for prevention of diseases.

Prophylaxis: Immunizing by drugs and antitoxins.

Incubation period of diseases.

Serum therapy.

Preventive medicine—Continued.

Texts and references:

1. Gatewood's Hygiene.
2. Pryor's Hygiene and Sanitation.
3. Stitt's Bacteriology.
4. Pharmacopoeia.

Supplementary reading from the following books which are to be found in the medical department libraries throughout the service: (1) Pryor's Naval Hygiene. (2) Gatewood's Hygiene. (3) Cunningham's or Gray's Anatomy. (4) Stitt's Bacteriology. (5) Food analysis. (6) Manual for Medical Department.

It will be noted that Army's Pharmacy is recommended. Ships will not have obtained this book, but all who have not Army Pharmacy will have Remington's work which is also a good text. Holland's Physiological Chemistry and Toxicology is mentioned in the books of reference; this book is not furnished by the medical department. The purchase price is \$3 and the Hospital Commissary who desires an excellent work in physiological chemistry and toxicology will make no mistake in purchasing this volume. Saunders Company, of Philadelphia, are the publishers.

NAVAL OVERSEAS TRANSPORTATION SERVICE.

The medical departments of the vessels of the Naval Overseas Transportation Service are handled very largely by hospital corpsmen on independent duty. These vessels are supervised upon arrival in port in the United States and abroad, and with the supervision are a few experienced medical officers of the Navy whose duty it is to inspect the ships from the standpoint of hygiene and sanitation and to advise and instruct hospital corpsmen assigned to this important duty, especially when they are so assigned independent of commissioned medical-officer personnel (doctors).

The following is an extract from a letter on the subject, "Medical officers N. O. T. S. vessels," published for the information of the service:

Commissioned officers of the medical department (doctors) can not as a rule be furnished vessels of the N. O. T. S. when the total naval complement is less than 120 persons. Each commanding officer should therefore consider the mission assigned his vessel from the standpoint of its bearing upon the medical department activities of the vessel in order that he may not find himself at sea with a medical problem difficult of solution; for instance, the mission of the vessel may involve the carrying of passengers; it may necessitate a greater separation or a longer separation than usual from a convoy or other command to which naval medical officers are regularly attached; the vessel may carry a cargo more than usually dangerous to life and limb of the crew; the port



University of Minnesota. Stretcher drill.



University of Minnesota. Resuscitation and first aid.



University of Minnesota. Hospital corpsmen assembled in medicinal gardens, for study of vegetable drugs.



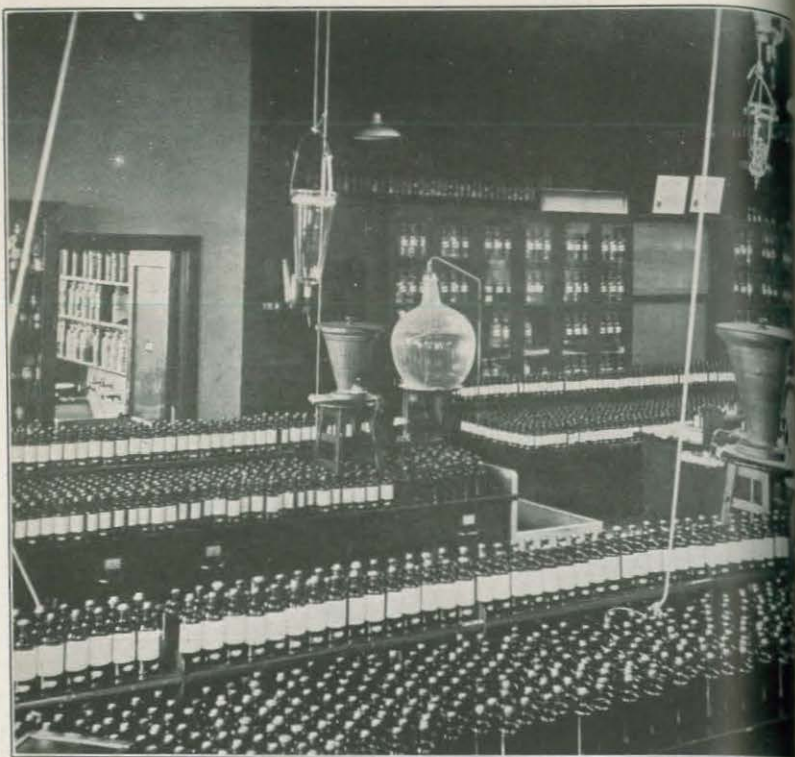
University of Minnesota. Hospital corpsmen harvesting digitalis in the medicinal gardens of the College of Pharmacy. In the conservatory of medicinal plants, in the background, the corpsmen study various drugs in their original form, as eucalyptus, senna, aloes, white poppy, wintergreen, atropa belladonna, etc.



University of Minnesota. Hospital corpsmen bottling digitalis purpurea at College of Pharmacy.



University of Minnesota. After picking the purple foxglove leaves the corpsmen spread them on trays in the drying room preparatory to pulverization and making up the liquid digitalis.



University of Minnesota. *Digitalis purpurea* prepared by Navy hospital corpsmen in the pharmaceutical laboratory, College of Pharmacy.



New Navy Building to which Bureau of Medicine and Surgery has moved.

to be visited may be especially dangerous to the crew because of the presence in those ports of quarantinable diseases, such as yellow fever, cholera, or plague, or infectious diseases, such as malaria, dysentery, typhus, etc. When in such manner the mission of the vessel is certain to bring about an increase in medical-department activities the commanding officer should request the assignment of a commissioned medical officer (doctor), and immediately upon the cessation of this special medical need should in like manner request that such commissioned medical officer be detached. The greatest economy in the utilization of commissioned medical officers (doctors) is necessary, because the supply of this type of commissioned personnel is limited, and if the need of civilian communities and the needs of the Army in the field are to be adequately met, the Navy must use the greatest care in the assignment of its commissioned medical personnel and whenever possible prevent the assignment of a doctor to a vessel or other unit of personnel with a total complement of less than 120 persons.

When a request for a commissioned medical officer (doctor) is considered necessary, attention should be invited in the request to (a) the ship's total complement; (b) the special medical need involved. Such request should be addressed to the Bureau of Navigation (Bureau of Medicine and Surgery) and routed, if in the war zone, via S. O. P., to Naval Headquarters, London, for action; if in the United States, via District Supervisor, N. O. T. S. The short stay of the N. O. T. S. vessel in port may at times make it imperative for such a request to be made by telephone or radio, in order that the action requested may succeed in getting the doctor on board before the vessel sails.

For years it has been found that a vessel with a complement of less than 120 persons can operate successfully without a commissioned medical officer (doctor). To such a vessel there is furnished, as a rule, one pharmacist's mate, first class (Bureau of Navigation letter No. 39-18). The Bureau of Medicine and Surgery asks that these hospital corpsmen separated from commissioned medical officers be used, so far as may be consistent with military exigency, in accord with Naval Regulations 1540; that they be encouraged and assisted to visit at frequent intervals naval medical officers for council and advice when the vessel is in a port, where contact with medical officers is practicable. In the ports of the United States the medical aids to the commandants of the naval districts have been directed to visit and inspect the medical department of these vessels whenever informed of their arrival in a port of the naval district. It is expected that the commanding officer will encourage and assist the hospital corpsman to look to the medical aid to the commandant or to his inspecting officer for guidance and assistance in the performance of his duties, the obtaining of medical supplies, and the disposition of the sick or injured, etc.

The hospital corpsmen are expected to be able to (a) care for the ordinary ailments of the crew while at sea; (b) administer first aid to any serious case that may occur; (c) maintain on board a proper amount of medical supplies to meet ordinary conditions; and (d) make out for forwarding the necessary medicine and surgery forms and keep the necessary medical records. They should inform the commanding officer of any suspected contagious or infectious disease that may appear and inform him promptly when a patient is in need of the services of a doctor. Each hospital corpsman is expected to be at all times ready to exert himself to the utmost to assist any person on board in need of assistance by reason of illness or injury and, so far as may be practicable, to segregate in the sick bay or other designated place any member of the crew who is on the sick list. He is expected to calmly, quietly, and efficiently aid the commanding

officer in the maintenance of the morale of the crew in the presence of disease or injury on board. He is expected to make every effort in the event that death occurs on board while en route to or from the United States, to assist the officer designated by the commanding officer to carry out the provisions of Naval Regulations 4551-4553. He should familiarize himself with General Order 392 and Bureau of Medicine and Surgery's Circular Letter S. D. 12950 (obtainable on request if not on board), and make every effort, in the absence of a medical officer, to assist the commanding officer to carry out the provisions of General Order 392, article 3, subparagraph (a). Whenever it is necessary to embalm and bring to the United States a body in conformity with General Order 392, the commanding officer, when approaching a port of the United States, should as soon as may be practicable notify the commandant of the naval district of such in order that the medical aids may take the necessary steps and make necessary arrangements.

When in the opinion of the commanding officer the hospital corpsman has served on board a sufficient length of time to demonstrate an especial fitness for the duties of his rating and has in all respects satisfactorily carried on the medical department activities of the vessel, the commanding officer should arrange to have him examined for advancement in rating by a board of the medical officers in accord with Bureau of Navigation's Annual Circular and Naval Regulations, routing his request for such examination via S. O. P. when based on a station in the war zone and via district supervisor N. O. T. S. when based on a port in the United States. (The short stay of these vessels in port at times results in difficulty in getting the hospital corpsmen examined before these vessels leave, a condition which creates discontentment.) If a hospital corpsman is thus found duly qualified for advancement in rating and actually advanced to a rating higher than that of pharmacist's mate, first class, which at this time is the allowed Hospital Corps complement for the vessels of the N. O. T. S., he should nevertheless not be transferred from the ship merely because he has been advanced to chief pharmacist's mate. The Bureau of Medicine and Surgery is making every effort to so train, guide, and instruct the hospital corpsman both before and after assignment to this important duty, independent of a commissioned medical officer, as to make him a real and valuable assistant to the commanding officer, and the bureau believes that these men, because of the special training, will often have an opportunity to save life or limb that might without their intelligent first-aid care be jeopardized, and that they will be able frequently to help the commanding officer in the solution of most medical problems that will present on these vessels while at sea.

The Bureau of Medicine and Surgery expects that some of these men may take their responsibility too heavily and that others may take the responsibility too lightly, but the experience of many years in dealing with the same problems on board destroyers and the vessels of the former Naval Auxiliary Service has led the Bureau of Medicine and Surgery to feel that the hospital corpsman assigned will in nearly every instance measure up to the high standard required of the hospital corpsman assigned as the sole representative of the medical department.

The following instructions have been used by one of the senior medical officers, N. O. T. S.: Ship Hygiene, Battle Stations, and Death Board.—(G. F. C.)

N. O. T. S. INSTRUCTIONS.

By R. A. BACHMANN, Commander Med. Corps, U. S. Navy, Senior Medical Officer N. O. T. S.

SHIP HYGIENE.

Under this title is to be considered protection from rats, mosquitoes, flies, bedbugs, roaches, and lice.

Prevent rats from coming aboard ship by using conical tin rat guards on all lines of cables leading to the shore. To combat rats already on the ship traps and poisons can be used. Traps are to be preferred, as often when a rat is poisoned on board ship it will crawl into some inaccessible space and die.

Traps can be purchased by the pay officer of the ship on a regular ship's requisition.

If the ship is badly infested with rats it should be fumigated. Report this to office of medical aid, N. O. T. S., New York, and request fumigation.

If the ship is in a port where mosquitoes or flies are troublesome or yellow fever or malaria are liable to exist, all sleeping quarters should be screened. The galley and heads should be screened against flies.

The best way to get rid of roaches is to sprinkle or blow sodium fluoride about the locations most frequently infested with roaches, namely, the galley, storerooms, pantry, etc.

The pay officer should be requested by you to secure 50 pounds of sodium fluoride, together with a powder blower, on a regular ship's requisition. If no blower can be secured, the sodium fluoride may be sprinkled around.

Bedbugs should be eradicated by the use of a mixture of two parts of kerosene to one of turpentine. Both of these ingredients are kept by the pay officer in the ship's stores and can be furnished by him directly.

This mixture is best used in an atomizer and sprayed around the most thickly inhabited places, great care being taken to thoroughly saturate all corners and crevices. The atomizer or spray can be secured by the pay officer on a regular ship's requisition. If you can not get a spray, a small syringe will answer the purpose. Mattresses and pillows should be thoroughly covered by a brush.

Fumigation should not be requested merely because a ship is infested with roaches and bedbugs.

You must remember, too, that if any infectious diseases occur aboard the ship a thorough cleaning of the compartment, followed by a complete washing down with a 1/1000 bichloride of mercury solution (including furniture and utensils), is just as effective as fumigation.

Plenty of soap and water is absolutely necessary in all cases where vermin abound.

PURIFICATION OF WATER.

Whenever a vessel takes on water in a foreign port, make all inquiries possible among local board of health physicians or in the absence among local private physicians concerning the purity of the water supply and the prevalence of intestinal and epidemic diseases.

If any doubt exists in your mind, purify the water by the use of small ampoules of calcium hypochlorite furnished you.

These ampoules contain 40 and 200 grs., enough to sterilize 100 and 500 gallons of water, respectively. Empty the contents of an ampoule into a mortar and add enough water to make a soft paste. Grind thoroughly and add to water in tanks in sufficient quantity to sterilize the amount contained therein. For example, 800 gallons of water in a tank would require the addition of the contents of one large and three small ampoules.

TYPHOID PROPHYLAXIS.

See that all the members of your crew are given antityphoid injections—one-half mil the first injection, one mil the next two injections. *Be sure to enter the completion of the injections in the medical health record.*

BATTLE STATIONS.

In order to meet the casualties that may be caused by an engagement with a hostile vessel, the pharmacist's mate must give first-aid instructions to the guns' crews, must supply each gun's crew with a first-aid bag, must organize a stretcher party, and establish a dressing station where the wounded can be cared for properly.

The first-aid instructions should consist in teaching the guns' crews: (a) How to stop hemorrhage; (b) how to dress wounds; (c) how to lay aside the wounded in a temporary place of safety until the stretcher party can carry them to the station.

As a rule there are two guns on N. O. T. S. vessels; therefore two first-aid bags must be provided unless there should be more guns. Each first-aid bag should contain one dozen instantaneous rubber tourniquets, two dozen packages each containing two or three sterilized gauze sponges, one-half dozen packages containing one large gauze sponge each, as described under shell-wound dressing in the Manual for the Medical Department, and one dozen bandages. There should also be provided one-half dozen splints. This bag should be best made of canvas, large enough to hold the above articles easily and should be marked with a red cross.

The stretcher party should be detailed by the commanding officer from the mess attendants of the ship and should receive instructions from the pharmacist's mate as to the proper method of transporting the wounded by means of a Stokes stretcher. Each pharmacist's mate must solve the problem of transporting the wounded according to the location of the ship's guns.

It has often been found expedient to consult a boatswain's mate in case any difficulties occur, as his practical experience in handling material aboard ship stands in good use in overcoming some obstacle which may arise when a wounded man has to be transported on board ship from one place to another. Stokes stretchers can be obtained by ship's requisition made out by the paymaster.

A dressing station should be located in a part of the ship as secure as possible from gunfire. It should have ample room for the wounded, ample lighting, and ample water supply. Read the article on "Battle Stations" in the Manual for the Medical Department, chapter 10, page 107. Follow its instructions as nearly as you can on board your own ship.

A Red Cross emergency outfit will be placed aboard every N. O. T. S. vessel in the near future. This outfit is not to be used under any circumstances except in the time of battle or other casualty. It contains an adequate supply of sterile dressings, etc., which can be used as needed.

DEATH ON BOARD N. O. T. S. SHIPS.

Should a death occur on your ship en route to or from the United States, the body is to be embalmed and returned to the United States. (G. O. 392, par. a.)

If a man dies, communicate at once with the nearest medical officer and obtain his assistance. If no medical officer is at hand, proceed to care for the body according to the instructions.

Your ship is being furnished with a complete embalming outfit and instructions for its use, and it will be necessary for you to do the embalming.

The Navy Regulations require that the body be dressed in clean and presentable uniform clothing. In the case of a body dead of smallpox, plague, Asiatic cholera, typhus fever, diphtheria or scarlet fever, the body, after washing, shall be bandaged completely, excepting the head, with muslin soaked in embalming fluid. The under-clothing and uniform are then put on over these bandages.

In case of a death always make out Form N and close up the health record.

In the event that there is no casket available ask the commanding officer to have the carpenter's mate make one.

Immediately upon arrival at a port in the United States inform the medical aid, N. O. T. S., of the death. If possible send a messenger to medical aid, N. O. T. S., before your arrival.

If you are in a port where there is no medical aid, N. O. T. S., where there is a United States naval hospital or United States naval hospital ship, communicate at once with either of them.

The commanding officer of your ship is to appoint an officer to take charge of the remains after you have embalmed and prepared the same, to see that everything is done in a satisfactory manner. This is according to paragraph 5, article 4551, Navy Regulations, which see below.

FUNERAL EXPENSES AND ALLOWANCES.¹

Immediately upon official notification of the death, from wounds or disease not the result of his own misconduct, of any officer or enlisted man on the active list of the Navy and Marine Corps, the paymaster General of the Navy shall cause to be paid to the widow, if no widow, to the children, and if there be no children to any dependent relative of such officer or enlisted man previously designated by him, an amount equal to six months' pay at the rate received by such officer or enlisted man at the date of his death. (Navy Regulations, 4551, par. 1.)

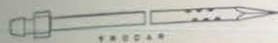
No funeral expenses of a naval officer who dies in the United States, nor expenses for travel to attend the funeral of an officer who dies there, shall be allowed. (See note below.) But when an officer on duty dies in a foreign country the expenses of his funeral, not exceeding his sea pay for one month, shall be defrayed by the Government, and paid by the paymaster upon whose books the name of the officer was borne for pay. (Navy Regulations, 4551, par. 2.)

In the case of enlisted men of the Navy and Marine Corps who die and are buried elsewhere than within the United States, the amount paid for funeral expenses, including preparation, encasement, interment of remains, shall not exceed \$50 each, unless due regard to decent burial renders greater expense necessary, which fact must be certified on all copies of the public bill by the officer ordering payment of the bill. (Navy Regulations, 4551, par. 3.)

The necessary and proper funeral expenses of enlisted men of the Navy and Marine Corps at naval stations within the United States will be provided for by annual contracts, and elsewhere within the United States will be allowed when approved by the Bureau of Medicine and Surgery, or by such officers as may be designated by the commanding officer, Navy and Marine Corps, respectively. (Navy Regulations, 4551, par. 4.)

¹ Funeral expenses of officers who die in the United States are authorized under the appropriations act.

THE NAVY STANDARD EMBALMING OUTFIT



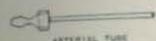
TROCAR



ANEURISM NEEDLE



NASAL TUBE



ARTERIAL TUBE



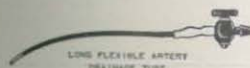
SCALPEL



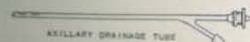
TISSUE FORCEPS



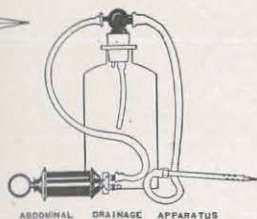
SCISSORS



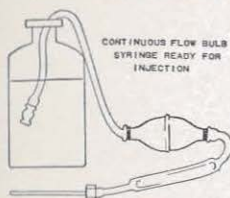
LONG FLEXIBLE ARTERY DRAINAGE TUBE



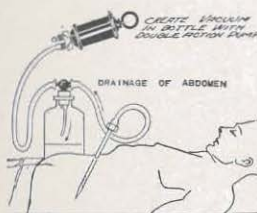
AXILLARY DRAINAGE TUBE



ABDOMINAL DRAINAGE APPARATUS

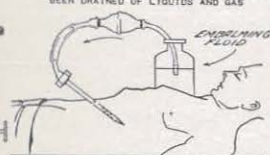


CONTINUOUS FLOW BULB SYRINGE READY FOR INJECTION

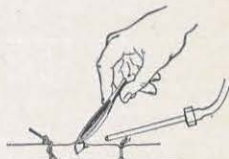


DRAINAGE OF ABDOMEN

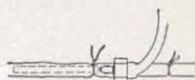
INJECT ABDOMEN LAST AFTER IT HAS BEEN DRAINED OF LIQUIDS AND GAS



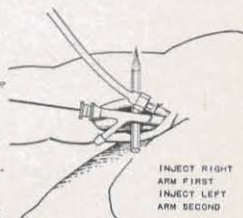
EMBALMING FLUID



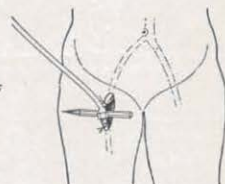
MAKE INCISION READY FOR INSERTION OF ARTERIAL TUBE OR AXILLARY DRAINAGE TUBE



ARTERIAL TUBE INSERTED



INJECT RIGHT ARM FIRST
INJECT LEFT ARM SECOND



INJECT RIGHT FEMORAL THIRD
INJECT LEFT FEMORAL FOURTH

1 PREPARE EMBALMING FLUID

R LIQUID FORMALDEHYDE 15.5 WILS. (C.C.)
WATER (distilled) 5.0 GRAMS
WATER (distilled) 10.0 WILS. (C.C.)
FOR 150 LB. MAN 15 QTS. 10,000 C.C.
FOR 200 LB. MAN 15 QTS. 15,000 C.C.
BE CAREFUL NOT TO OVER INJECT
ARTERIES TWO (2) QTS. MAY BE
SUFFICIENT. INJECT UNTIL CLEAR
FLUID RUNS OUT OF BASILIC VEIN.

2 ASSEMBLE OUTFIT FOR USE.

3 INSERT AND TIE AXILLARY DRAINAGE TUBE IN RIGHT BASILIC VEIN AND LEAVE IN UNTIL ALL INJECTIONS HAVE BEEN MADE.

4 INSERT AND TIE ARTERIAL TUBE IN RIGHT BRACHIAL ARTERY. INJECT FLUID UPWARD THEN DOWNWARD. NEXT INJECT LEFT BRACHIAL.

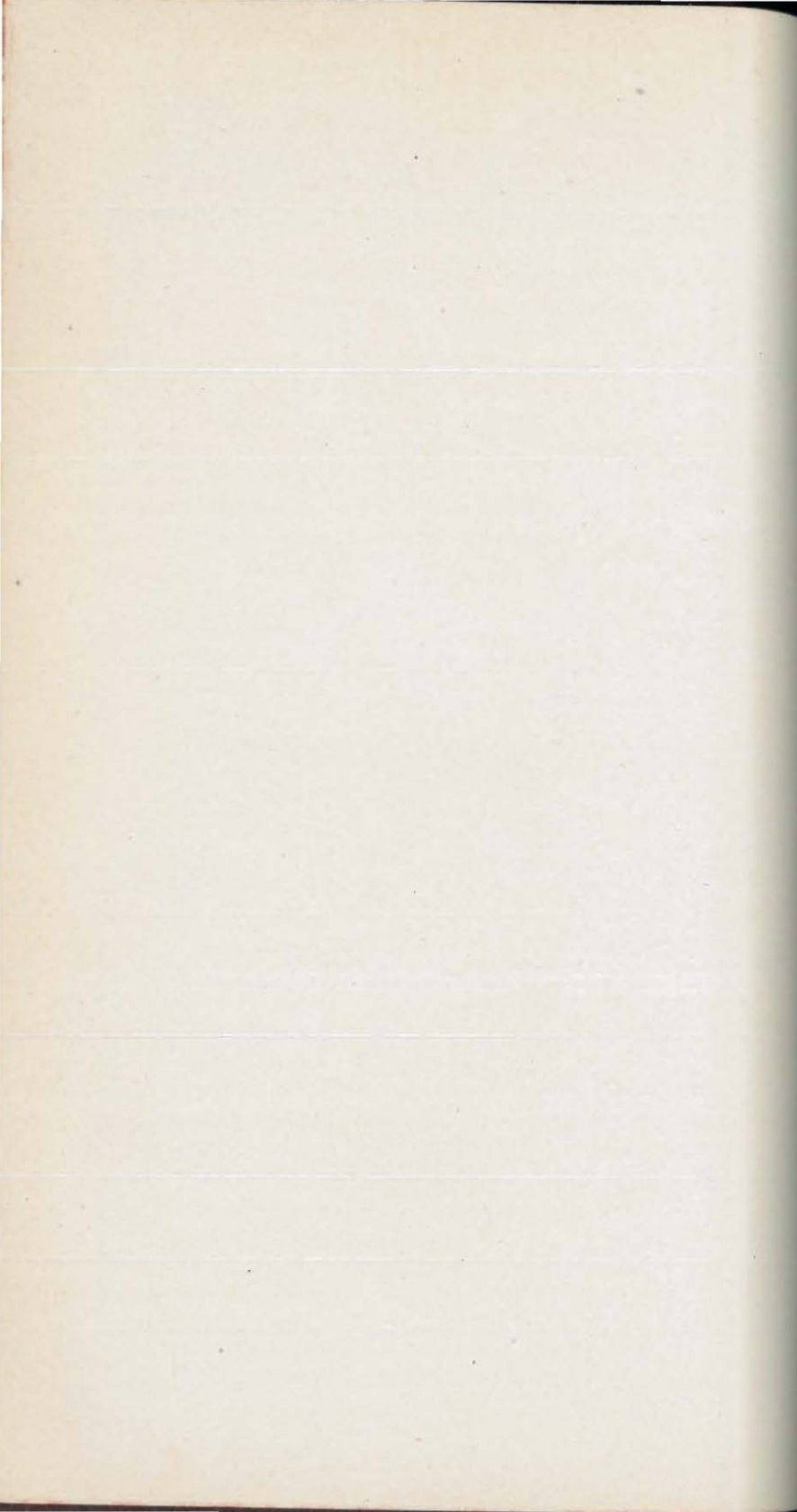
5 INSERT ARTERIAL TUBE IN RIGHT FEMORAL ARTERY AND INJECT DOWNWARD ONLY. THEN INJECT LEFT FEMORAL.

6 INJECTION OF THE CAROTID ARTERY IS SELDOM NECESSARY.

7 ABDOMINAL DRAINAGE AND INJECTION OF ABDOMINAL CAVITY.

8 TIE UP ARTERIES AND VEIN AND SEW UP INCISIONS IN THE SKIN.

9a J. Behr 1st.



The remains of naval dead shall be prepared for interment or for shipment to their homes under the supervision of an officer who shall determine by final inspection in each instance that the work of embalming, cleansing, shaving, and dressing have been competently performed, and that the encasement, clothing, etc., meet all the requirements of the occasion and comply with the terms of the contract. (Navy Regulations, 4551, par. 5.)

Where available clothing belonging to a deceased enlisted man is not sufficient in quantity or of proper kind or quality, or is too much worn, new clothing (outer and under) shall be obtained as may be necessary from the Supply Department and charged to the appropriation contingent, Medicine and Surgery. (Navy Regulations, 4551, par. 6.)

Especial care shall be exercised that the evidence of autopsies shall not cause unnecessary distress to parents, and that the wounds so made shall be neatly closed, and that packings and dressings employed shall be of clean and suitable material. (Navy Regulations, 4551, par. 7.)

Navy (or Army) standard caskets, when available, shall be used for transportation of remains of officers and enlisted men. (Navy Regulations, 4551, par. 8.)

Transportation of remains is governed by annual appropriation, and is distinct from "funeral expenses" or "expenses of interment." (Navy Regulations, 4551, par. 10.)

Upon the transfer of a deceased person's account to the Auditor for the Navy Department the officer of the Pay Corps concerned shall note thereon the amount paid by him for funeral expenses. Officers paying funeral expenses shall immediately report the amount thereof to the Bureau of Supplies and Accounts. (Navy Regulations, 4552 and 4553.)

The commanding officer shall cause to be entered in the log book the name and rank or rating of any person who may die on board, and also a statement of the exact time of his death.

He shall report to the department (Bureau of Navigation) any death that may occur on board. In addition, information of the same shall be forwarded to the nearest relative or legal representative of the deceased if the address of such person can be obtained. He is authorized to use the telegraph for this if deemed expedient. In all cases where the wishes of the kin are desired with respect to disposition of remains, they should be instructed by telegraph to communicate without delay direct with the Surgeon General, Navy Department, Washington, D. C.

He shall, upon the death of any person on board the ship under his command, cause all of the effects of the deceased to be collected

and inventoried. If the deceased was an officer, this shall be done by two officers of the ship; if a member of the crew or other person, by the officer of his division or one detailed for the purpose. The inventories shall be made out in duplicate, duly attested and signed by the officers making them. Upon the completion of the inventory the effects, if not of a perishable nature, shall be put up in packages of a convenient size and sealed with the seal of the ship. The commanding officer shall retain one copy of the inventory himself and shall deliver the other to the supply officer, who shall also take charge of the effects for safe-keeping.

If any of the effects of a deceased person are perishable and deteriorating, they shall be immediately sold at auction.

MEDICAL DEPARTMENT CIRCULAR LETTERS.

WASHINGTON, D. C., *June 24, 1918.*

To: All Medical Officers.

Subject: Disposal of the Army and Navy dead; embalming and preparation of remains for transportation.

References: (a) Navy Regulations, Articles 4551-4553. (b) Manual for the Medical Department, paragraphs 2444, 3431-3440. (c) Navy Department General Order No. 392.

1. This letter supersedes Bureau of Medicine and Surgery circular letter No. 129504 of February 15, 1918.

2. Navy Department General Order No. 392 sets forth an agreement entered into by the Secretary of War and the Secretary of the Navy, governing the Army and Navy in the transportation of the sick and wounded between the United States and France or England, and the disposal of the remains of officers, enlisted men, and civilian employees of the Army, Navy, and Marine Corps who die en route between the United States and France or England, or in France.

3. Article II of this order provides that remains of all officers, enlisted men, and civilian employees of the Army, Navy, and Marine Corps who have died or who may hereafter die in France shall be buried in France until the end of the war, when the remains shall be brought back to the United States for final interment.

4. Article III provides that the remains of all officers, enlisted men, and civilian employees of the Army, Navy, and Marine Corps who die on board ship en route to or from the United States shall be embalmed and returned to the United States on board the ship in which the death occurs. All ships engaged in transporting troops will be provided with the necessary personnel and material to carry out this requirement.

5. In all cases not specified in the above agreement, the Navy Department will carry out its present policy of returning the remains

of deceased officers and enlisted men of the Navy and Marine Corps to the United States as soon as practicable.

6. Upon arrival at a port of the United States the following instructions shall be observed:

NAVY DEAD.

Telegraph immediately to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., requesting instructions as to further disposition of the remains. If there is a naval hospital at the port, transfer the remains to the hospital and advise the bureau of this action in the telegram.

ARMY DEAD.

If New York is the port of arrival, communicate by telephone with the Army Quartermaster Department, Army Docks, Hoboken, N. J., giving name, organization, and next of kin. At all other ports, telegraph immediately to the Quartermaster General, U. S. Army, War Department, Washington, D. C., requesting instructions.

7. The following paragraphs apply to the care, preparation, and transportation of all Navy dead and to the care of Army dead prior to transfer to custody of Army authorities.

Attention is invited to the Navy Regulations, Article 4451, paragraphs 5, 6, 7, 8, and 9, with which there must be strict compliance.

8. The remains of the dead shall be prepared for interment or for shipment under the supervision of a medical officer, who shall determine by final inspection in each instance that embalming, cleansing, shaving, and dressing of the body have been properly performed and that the encasement and clothing meet the requirements of this letter.

9. Although the regulations adopted in May, 1915, by the conference of State and provincial boards of health do not require embalming of bodies unless dead of certain communicable diseases herein-after mentioned, where the destination or place of final interment will be reached within 24 hours after death, nevertheless all bodies prepared for interment or for shipment under the supervision of a medical officer of the Navy shall be thoroughly and completely embalmed by the method described in paragraph 10, and the embalming fluid described in paragraph 11 shall be used in all cases except those in which the embalming is done in the United States by a licensed undertaker, who may be allowed to use the standard embalming fluid with which he is familiar, provided it is fresh and provided it conforms to Rule 7 of the above-mentioned regulations, as follows:

Rule 7. An approved disinfectant fluid (embalming fluid) shall contain not less than 5 per cent formaldehyde gas. The term "embalming" as employed in these rules shall require the injection by licensed embalmers of not less than

10 per cent of the body weight, injected arterially, in addition to cavity injection, and 12 hours shall elapse between the time of embalming and the shipment of the body.

Licensed embalmers may be allowed to exercise preference within these limitations, but they will be required to conform with the method of embalming described in paragraph 10—to make certain that the body will be prepared to withstand unusually high room temperatures or delays in transportation and arrive at its destination in good condition after weeks or months without danger of transmitting communicable disease.

10. *Method of embalming.*—The arterial system shall be injected with an amount of the prescribed embalming fluid equal to 15 per cent of the body weight, estimating 450 c. c. of fluid as 1 pound.

Inject each femoral artery toward toes with 2 per cent body weight.

Inject each brachial artery toward fingers with 1 per cent body weight.

Inject one common carotid artery toward head with 1 per cent body weight.

Inject same common carotid artery toward heart with 1 per cent body weight.

Total amount of fluid, including both femorals and both brachials, 15 per cent body weight.

The technique of injection is important because prolonged preservation will depend upon saturation of every tissue of the body with embalming fluid. To insure uniform distribution it is usually necessary to make all six injections. The return of fluid through the veins while the extremities are being injected will indicate saturation of the extremities, and the return of fluid during the carotid injection upward will indicate that sufficient fluid has been injected into the head and upper extremities. It is an easy matter to overinject so that the face and hands are puffy and unnatural. If the eyes, lips, or one side of the face become overdistended, or in the case of an extremity, when it is apparent that the fluid has circulated from the smaller arteries through capillaries into the veins, injection should cease, regardless of the amount of fluid already used. Overinjection is not objectionable if a long time is to elapse before the body is to be viewed.

If fluid can not be forced into an artery because of clots or other reasons, such as mutilation of an extremity, multiple injections may be made into the tissues of the part, which should then be wrapped in cotton saturated with embalming fluid. It is not necessary to withdraw blood from the veins, although there is no objection to this. Bodies are to be embalmed in the same way after autopsy.

but in such cases the cavities of the abdomen, chest, and skull shall be packed with absorbent cotton saturated with embalming fluid. The anus, mouth, and nostrils shall be plugged with cotton soaked in embalming fluid and the entire body, including the face, ears, and hair, shall be washed with the fluid. A liberal application of vaseline will prevent drying.

In the case of a body dead of smallpox, plague, Asiatic cholera, typhus fever, diphtheria, or scarlet fever, the body, after washing, shall be bandaged completely, excepting the head, with muslin soaked in embalming fluid. The head and face shall be enveloped in a suitable cloth saturated with embalming fluid. (See par. 12.)

11. *Embalming fluid.*—

Liquid formaldehyde (U. S. P. solution of formaldehyde).....	13.5 c. c.
Sodium borate (borax).....	5 grams.
Water, sufficient to make.....	100 c. c.

Should the strength of the solution of formaldehyde contain less than 37 per cent of formaldehyde gas the amount used should be increased proportionately.

The exact composition of an embalming fluid is of less importance than the method of injecting it, but fluid made by this formula will retain its stability for more than two and one-half years, and it has proven effective in preserving human subjects exposed for two months to a temperature of 98 F. This formula will be used, therefore, in all cases, as set forth in paragraph 9. Formaldehyde in acid solution bleaches muscular tissue to an ashy gray, but this is overcome by the addition of borax, which furnishes the desired alkalinity without causing deterioration. Sodium hydrate, potassium hydrate, ammonium hydrate, sodium sulphite, and sodium carbonate all cause marked deterioration.

12. *Transportation of remains (and interment).*—The Navy Regulations require that the body shall be dressed in clean and presentable uniform clothing. In the case of a body dead of one of the above-mentioned communicable diseases, the underclothing and uniform shall be put on over the prescribed bandages. New clothing, outer and under, shall be obtained, if necessary, from the Pay Department, and charged to the appropriation contingent, medicine and surgery. Navy or Army standard caskets, when available, shall be used for transportation of remains. Rules regarding transportation of the dead, adopted by the Conference of State and Provincial Boards of Health, May, 1915, require that bodies dead of smallpox, plague, Asiatic cholera, typhus fever, diphtheria, and scarlet fever shall be placed at once in a metal-lined casket which shall be hermetically and permanently sealed.

Rule 4 provides that no disinterred body dead from any disease or cause shall be transported by common carrier unless approved by the health authorities having jurisdiction at the place of disinterment, and that transit permit and transit label shall be required. Disinterment and transportation of bodies dead of the above-mentioned communicable diseases shall not be allowed except by special permission of the health authorities at both the place of disinterment and the point of destination. All disinterred remains shall be inclosed in metal or metal-lined boxes hermetically sealed, provided that bodies in a receiving vault, when prepared by licensed embalmers, shall not be regarded as disinterred bodies until after the expiration of 30 days.

Rule 1 provides that "a transit permit and transit label issued by the proper health authorities shall be required for each dead body transported by common carrier."

"The transit permit shall state the name, sex, color, and age of the deceased, the cause and date of death, the initial and terminal points, the date and route of shipments, a statement as to the method of preparation of the body, the date of issuance, the signature of the undertaker, the signature and the official title of the officer issuing the permit."

"The transit label shall state the place and date of death, the name of the deceased, the name of the escort or consignee, the initial and terminal points, the date of issuance, the signature and official title of the officer issuing the permit, which label shall be attached to the outside case."

Rules 5 and 6 provide that the outside case may be omitted in all instances when the coffin or casket is transported in hearse or undertaker's wagon, and that every outside case shall bear at least four handles, and when over 5 feet 6 inches in length shall bear six handles.

13. Transportation (subject to the provisions of art. 4551, Navy Regulations, and par. 3455, Manual for the Medical Department, U. S. Navy) shall be effected either on two first-class tickets or by express on Government bills of lading, across the face of which the following notation shall be entered diagonally:

Transportation charges will be paid by the Navy Department. No charges in connection with this bill of lading will be collected from the consignee.

14. The next of kin, family, legal representative of the deceased or the consignee, should the body be sent to other than the preceding shall be informed by telegram of the time of forwarding and of any special attending circumstances, such as communicable disease and the advisability or inadvisability of opening the casket for the purpose of viewing the remains.

W. C. BRAISTED.

WASHINGTON, D. C., *September 21, 1918.*

To: All medical officers and hospital corpsmen.

Subject: Change in titles of nomenclature of diseases and injuries.

1. The following change in titles, Navy nomenclature of diseases and injuries, shall become immediately effective:

Under injuries strike out the following:

Diagnosis No.	Title	Navy class No.	Inter. No.
2053	Wound, gunshot (state site).....	XX	170
2054	Wound, incised (state site).....	XX	171
2055	Wound, lacerated (state site).....	XX	186
2056	Wound, punctured (state site).....	XX	171

and substitute:

2058	Wound (state character, site, and causative agent).....	XX
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2. In conformity with the above the following instructions are issued:

Character: Incised, lacerated, or punctured.

Site: State briefly the location of the injury or the part affected, as: face, skull, shoulder, chest, abdomen, thigh, etc.

Causative agent: State briefly the agent causing the injury, such as: bullet, grenade, bomb, knife, bayonet, shell, machinery, etc.

3. The following examples are given:

2058. Wound, lacerated, face and abdomen, hand grenade, key letter "K."

2058. Wound, lacerated, left index finger, machinery, key letter "H."

2058. Wound, incised, throat, razor, key letter "A."

2058. Wound, punctured, chest, rifle bullet, key letter "B."

2058. Wound, lacerated, scalp, hatch combing, key letter "G."

4. In reporting injuries under the following titles, the site and causative agent (or causative agent only when site of injury is indicated in the title), shall be included in the diagnosis.

2001. Abrasion (state site and causative agent).

2002. Air embolism (state site and causative agent).

2003. Avulsion (state part and causative agent).

2005. Burn (state site and causative agent).

2006. Castration, traumatic (state causative agent).

2007. Compression (state part and causative agent).

2008. Contusion (state part and causative agent).

2009. Crush (state part and causative agent).

2010. Decapitation (state causative agent).

2013. Dislocation (state articulation and causative agent).

2016. Emphysema, traumatic (state site and causative agent).

2017. Epilation, traumatic (state site and causative agent).

2018. Epiphyseal separation (state bone and causative agent).

2022. Foreign body, traumatic (state site and causative agent).

2023. Fracture (state bone) compound (state causative agent).

2024. Fracture (state bone) simple (state causative agent).

2028. Hematocele, tunica vaginalis, traumatic (state causative agent).

2029. Hematoma (state site) traumatic (state causative agent).

2030. Hemorrhage into eyeball, traumatic (state causative agent).

2031. Hemorrhage into (state) joint, traumatic (state causative agent).

2082. Hemorrhage under conjunctiva, traumatic (state causative agent).
 2033. Intracranial injury (state causative agent).
 2084. Intraspinial injury (state causative agent).
 2036. Multiple injuries, extreme (state causative agent).
 2038. Rupture (state organ or part), traumatic (state causative agent). (Not to be used for hernia q. v., under disease.)
 2044. Strangulation (state causative agent).
 2049. Synovitis (state joint) traumatic (state causative agent).

5. The following examples are given:

2003. Avulsion l. f. arm, shell, key letter "E."
 2010. Decapitation, propeller blade, key letter "L."
 2023. Fracture femur, compound, shrapnel, key letter "K."
 2038. Rupture, tympanum (both), 8-inch gun, key letter "E."

W. C. BRAISTED.

WASHINGTON, D. C., *July 29, 1918.*

To: All medical officers and hospital corpsmen.

Subject: Instructions for recording Army personnel (officers and enlisted men) admitted to treatment.

1. In all cases of United States Army personnel admitted to treatment the following reports shall be prepared:

(A) Form F card (Navy).

(B) Medical history sheet (art. 2293, Manual for Medical Dept. 1917).

(C) Form 52, Medical Department, United States Army.

2. As soon as a case is discharged to duty or otherwise disposed of completed Form F card, medical history sheet and Form 52, Medical Department, United States Army, shall be immediately forwarded to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

3. The Form F card (duplicate) shall be retained in the files and at the end of the month all Army personnel disposed of during the month shall be returned on Form F as supernumeraries. These cases shall not be included in Form K.

4. A supply of Form 52, Medical Department, United States Army, is inclosed herewith. (An additional supply of this form may be obtained by letter from Bureau of Medicine and Surgery.)

W. C. BRAISTED.

GOVERNMENT OF THE UNITED STATES.

Legislative branch.—Congress: Senate (96 Senators); House of Representatives (435 Representatives, 2 Delegates, 3 Commissioners).

Executive branch.—The President.

Judicial branch.—Supreme Court, circuit courts of appeals, United States district courts, various special courts, Court of Claims, Court of Customs Appeals, District of Columbia courts, Territorial courts.

I. DEPARTMENT OF STATE.

Diplomatic Service.	Consular Service.
Division of Western European Affairs.	Division of Latin American Affairs.
Division of Far Eastern Affairs.	Division of Mexican Affairs.
Division of Near Eastern Affairs.	Bureau of Citizenship.

II. DEPARTMENT OF THE TREASURY.

Comptroller of the Currency.	Federal Farm Loan Bureau.
Treasurer of the United States.	Bureau of Engraving and Printing.
Internal Revenue Bureau.	Bureau of Public Health Service.
Bureau of the Mint.	Coast Guard (see Navy).
Comptroller of the Treasury.	Supervising Architect's Office.
Auditors for departments.	Bureau of War-Risk Insurance.
Register of the Treasury.	General Supply Committee.

III. DEPARTMENT OF WAR.

General Staff Corps: War College Division.	Board of Engineers for Rivers and Harbors.
Board of Ordnance and Fortification.	Mississippi River Commission.
Militia Bureau.	California Débris Commission.
Office of Chief of Coast Artillery.	Office of Public Buildings and Grounds.
Office of Judge Advocate General.	Office of Chief of Ordnance.
Office of Inspector General.	Office of Chief Signal Officer.
Office of Adjutant General.	Bureau of Insular Affairs:
Office of Provost Marshal General.	Philippine Government.
Office of Quartermaster General.	Porto Rico Government.
Office of Surgeon General.	Dominican Receivership.
Office of Chief of Engineers:	

IV. DEPARTMENT OF JUSTICE.

Solicitor General.	Departmental solicitors.
Assistant Attorneys General.	Attorneys in charge of titles.
Special Assistant Attorney General, war work.	Division of Investigation.
Attorney in charge of pardons.	Superintendent of Prisons.

V. POST OFFICE DEPARTMENT.

First Assistant Postmaster General:	Division of Stamps.
Division of Postmasters' Appointments.	Division of Money Orders.
Division of Post Office Service.	Division of Registered Mails.
Division of Dead Letters.	Division of Classification.
Second Assistant Postmaster General:	Division of Postal Savings.
Division of Railway Adjustments.	Fourth Assistant Postmaster General:
Division of Foreign Mails.	Division of Rural Mails.
Division of Railway Mail Service.	Division of Equipment and Supplies.
Third Assistant Postmaster General:	Topography Branch.
Division of Finance.	

VI. DEPARTMENT OF THE NAVY.

Office of the Secretary:	Bureau of Navigation:
Naval Consulting Board.	Hydrographic Office.
Naval Records and Library.	Naval Observatory.
Judge Advocate General.	Naval Militia.
Navy-Yard Commission.	Naval Reserve.
Office of Naval Operations:	Bureau of Construction and Repair.
Office of Naval Intelligence.	Bureau of Supplies and Accounts.
Communication Service.	<i>Bureau of Medicine and Surgery.</i>
Gunnery and Engineering.	Bureau of Steam Engineering.
Inspection and Survey.	Bureau of Yards and Docks.
Coast Guard (during the war).	Bureau of Ordnance.
Aviation Section.	Marine Corps.

VII. DEPARTMENT OF THE INTERIOR.

Office of the Secretary:	Office of Indian Affairs.
Alaskan Engineering Commission.	Bureau of Pensions.
District of Columbia Institutions	Patent Office.
St. Elizabeths Hospital.	Bureau of Education.
Columbia Institution for the	Geological Survey.
Deaf.	Reclamation Service.
Howard University.	Bureau of Mines.
Freedmen's Hospital.	National Park Service.
General Land Office.	

VIII. DEPARTMENT OF AGRICULTURE.

Office of Farm Management.	Bureau of Biological Survey.
Weather Bureau.	Bureau of Crop Estimates.
Bureau of Animal Industry.	States Relations Service.
Bureau of Plant Industry.	Bureau of Public Roads.
Forest Service.	Bureau of Markets.
Bureau of Chemistry.	Insecticide and Fungicide Board.
Bureau of Soils.	Federal Horticultural Board.
Bureau of Entomology.	Division of Publications.

IX. DEPARTMENT OF COMMERCE.

Bureau of the Census.	Bureau of Lighthouses.
Bureau of Foreign and Domestic Com- merce.	Coast and Geodetic Survey.
Bureau of Standards.	Bureau of Navigation.
Bureau of Fisheries.	Steamboat-Inspection Service.

X. DEPARTMENT OF LABOR.

United States Employment Service.	Children's Bureau:
Bureau of Immigration.	Child Labor Division.
Bureau of Naturalization.	National War Labor Board.
Bureau of Labor Statistics.	Bureau of Housing.

XI. INDEPENDENT ESTABLISHMENTS.

LIBRARY, PRINTING, AND SCIENCE.

Library of Congress:
 Copyright Office.
 Government Printing Office:
 Superintendent of Documents.
 Smithsonian Institution:
 National Museum.
 Bureau of American Ethnology.

National Zoological Park.
 Astrophysical Observatory.
 International Catalogue of Scientific Literature.
 International Exchange Service.
 National Academy of Sciences.
 National Research Council.

COMMERCIAL AND INDUSTRIAL.

Interstate Commerce Commission.
 Director General of Railroads.
 The Panama Canal.
 United States Tariff Commission.
 Civil Service Commission.
 United States Bureau of Efficiency.

Federal Reserve Board.
 Federal Trade Commission.
 Board of Mediation and Conciliation.
 Employees' Compensation Commission.
 Federal Board Vocational Education.

Pan American Union.

WAR BOARDS.

Committee on Public Information.
 Council of National Defense.
 War Industries Board.
 United States Shipping Board and
 Emergency Fleet Corporation.
 United States Food Administration.
 United States Fuel Administration.

War Trade Board.
 National Advisory Commission for
 Aeronautics.
 Aircraft Board.
 Alien Property Custodian.
 War Finance Corporation.

American National Red Cross.

MISCELLANEOUS.

International Joint Commission.
 Commission on Waters of Rio Grande.
 International Boundary Commission.
 United States Geographic Board.
 Commission of Fine Arts.
 Arlington Memorial Amphitheater.

National Homes Volunteer Soldiers.
 Soldiers' Home—Regular Army.
 Board Road Commissioners, Alaska.
 Commission Navy Yards and Stations.
 Board of Indian Commissioners.

The District of Columbia.

For further information in regard to Government activities, address Service Bureau, Fifteenth and G Streets NW., Washington, D. C.

Compiled by W. I. SWANTON for Bureau of Education, June, 1918.

THE BUREAU OF MEDICINE AND SURGERY MOVES.

The Bureau of Medicine and Surgery recently moved from the old quarters in the Navy Annex Building to the new Navy Building on B Street NW.

This new building is a three-story concrete structure with a total floor space of approximately 900,000 square feet, and houses practically all departments of the Navy. It extends from Seventeenth and B Streets to Nineteenth and B, near Potomac Park. It is divided into nine wings extending from the main building, which runs parallel to B Street.

On the first floor are located the following departments: Bureau of Supplies and Accounts, Bureau of Naval Operations, Bureau of Medicine and Surgery, Bureau of Navigation, and the superintendent of the building.

On the second floor are located the Bureau of Construction and Repair, Bureau of Steam Engineering, chief clerk of department, Inspection and Survey, Judge Advocate General, Naval Operations, and Bureau of Yards and Docks.

On the third floor are the Bureau of Ordnance, Bureau of Steam Engineering, Aviation, Bureau of Navigation, and a large restaurant for the employees of the building.

A plan of the offices occupied by the Bureau of Medicine and Surgery appears on another page.

The personnel of the Bureau of Medicine and Surgery at present is as follows:

Surgeon General: W. C. Braisted, rear admiral, Medical Corps, United States Navy.

Assistant Chief of Bureau: J. A. Murphy, captain, Medical Corps, United States Navy.

Chief Clerk: W. S. Gibson.

Assistant: W. S. Douglass.

Officer Personnel:

R. A. Warner, commander, Medical Corps, United States Navy.

W. N. Cogan, lieutenant commander, Dental Corps, United States Navy.

C. L. McCarthy, lieutenant, Medical Corps, United States Navy.

E. J. Powell, clerk.

Hospital Corps:

G. F. Cottle, lieutenant commander, Medical Corps, United States Navy.

L. C. Sims, lieutenant (T), Medical Corps, United States Navy.

Nurse Corps:

Mrs. L. Higbee, superintendent, United States Navy Nurse Corps.

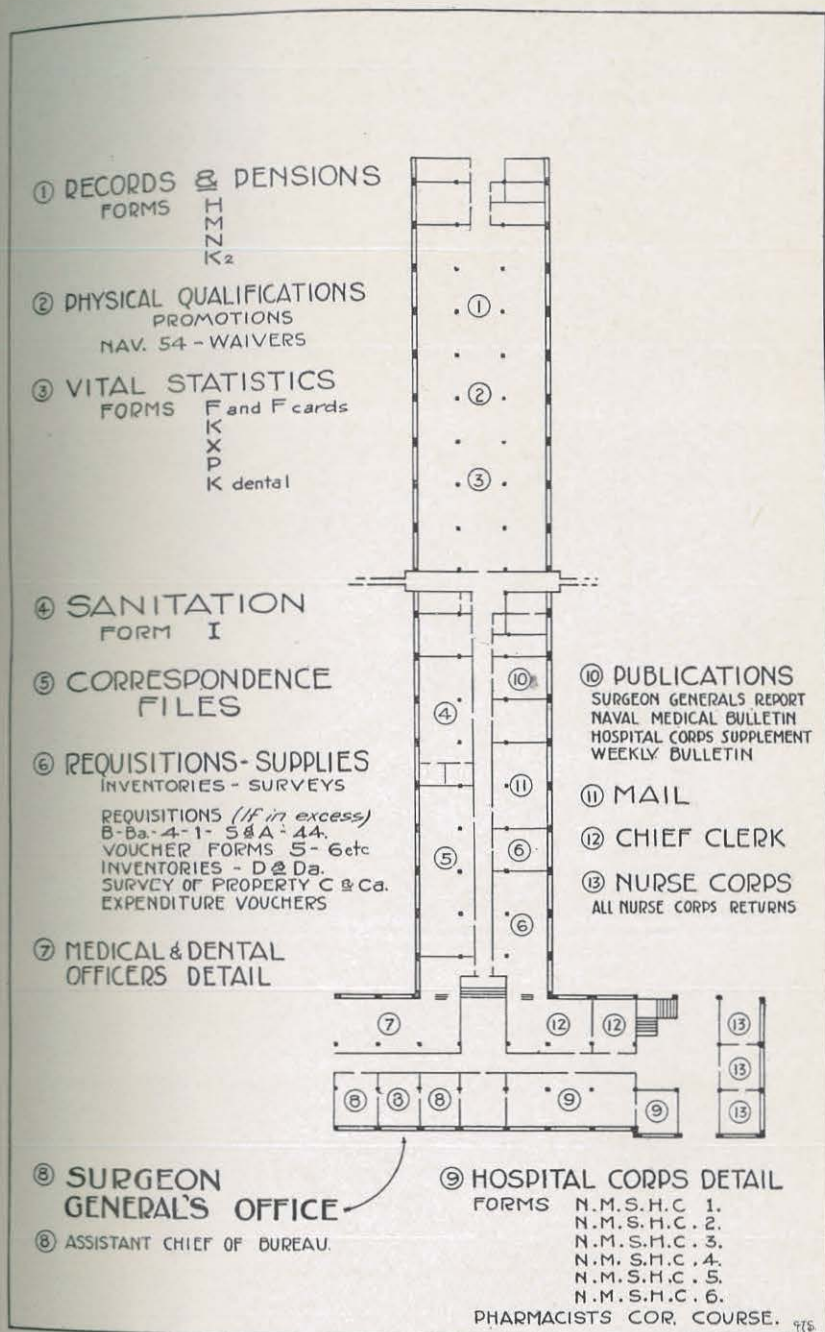
Miss C. L. DeCeU, chief nurse, United States Navy Nurse Corps.

Physical Requirements:

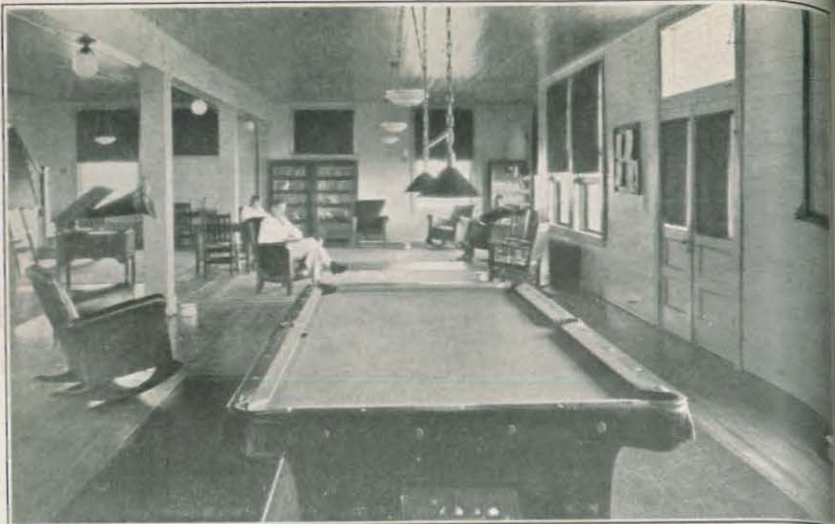
E. M. Blackwell, commander, Medical Corps, United States Navy.

A. C. Stanley, lieutenant commander, Medical Corps, United States Navy (retired).

W. Worth, clerk.



Floor plan Bureau of Medicine and Surgery, new Navy Department Building, Washington, D. C.



Hospital Corps recreation room, Naval Training Station, San Francisco, Cal.



Part of Hospital Corps detachment, Naval Training Station, San Francisco, Cal.



Health Records, Pensions, Promotions, etc.:

- C. A. Alexander, lieutenant (T), Medical Corps, United States Navy.
 C. R. Steen, pharmacist (T), United States Navy.
 F. H. Burch, pharmacist (T), United States Navy.

Statistics:

- J. H. Holden, lieutenant (T), Medical Corps, United States Navy.
 L. Nottingham, lieutenant (T), Medical Corps, United States Navy.
 R. R. Hinnant, lieutenant (T), Medical Corps, United States Navy.

Sanitation:

- J. R. Phelps, lieutenant commander, Medical Corps, United States Navy.
 C. Fox, surgeon, United States Public Health Service.
 J. T. Cassady, pharmacist, Naval Reserve Force.

Naval Districts, Hospital Ships, Red Cross: W. E. Eaton, lieutenant commander, Medical Corps, United States Navy.

Gas Defense:

- G. H. Mankin, lieutenant, Medical Corps, United States Navy.

Publications: J. S. Taylor, captain, Medical Corps, United States Navy.

Requisitions:

- O. G. Ruge, lieutenant (T), Medical Corps, United States Navy.
 E. L. Sleeth, lieutenant (T), Medical Corps, United States Navy.

Bookkeeping: J. W. Rohrbach.

Correspondence Files:

- J. K. Mahneke, pharmacist (T), United States Navy.
 C. T. Earle.
 Miss F. B. DeKrafft.

Mail Room: J. Kane.

Pharmacist's Correspondence Course: H. A. May, commander, Medical Corps, United States Navy.

The relation of the Bureau of Medicine and Surgery of the Navy Department to the general scheme of the Federal Government of the United States may be seen in the foregoing tabulation.—(L. C. S.)

LIGHTS AND SHADOWS.

The winters in Peking are wonderful. Month follows month without a drop of rain or a single snowflake. The air is dry and cold and bracing, and it is all unclouded weather and blue sky. One day when some one was praising the glorious winter climate a hearer spoke up and said he had been praying for rain or a restful gray day to give his nerves a let down.

The succession of the seasons is nature's recognition of the need for change and variety. In the mental and moral world this is just as true as in the physical. Alternations of sun and shadow and heat and cold have their counterpart in the varying fortunes, in the ups and downs of life.

Our illustrations show the luxuriously appointed quarters at the San Francisco Training Station, and some of our readers will smile at the contrast between the big arm chairs in the hospital corps-

men's parlor and the ditty boxes or hard steel decks which the men aboard ship must occupy when there is a brief period of respite from work and a moment of leisure for reading the Supplement, the Handy Book, or some other form of *light* literature. What a vast difference between the quiet charm of the hospital corpsman's private sleeping apartment with its mission rocker, chiffonier, and real bed and the bunk in the sick bay which the hospital corpsman at sea is sometimes privileged to occupy between 9 p. m. and 6 a. m.

We can not have everything. It is a safe guess that the lad pictured with a book on his knee is reading about some startling experience on a transport or torpedo boat and wishing he could exchange his comfortable surroundings for adventures that would thrill the folks at home and help him to acquire merit in the eyes of his best girl.

Some six hundred years ago a man named Dante made himself immortal as a poet. Unfortunately his ideas on politics were not those of the party that had the upper hand, and he spent about 20 years of his life as a wanderer and exile from Florence. He may not have been sure of his fame, but the bitterness of banishment and the trials that attend one who must be ever seeking a new home and the good offices of some powerful protector may have inspired his assertion:

"Sedendo in piume in fama non si vien ne sotto coltre," which translated into modern vernacular would read: "One does not ride to glory in a rocking chair or get mentioned in dispatches by sleeping in a four-poster bed."

The well-appointed recreation room has its place, and the sea-going man should not begrudge it to a man ashore, for after all the life at sea has its compensations. Othello won the love of the belle of Venice because he could talk so fascinatingly of his "moving accidents by flood and field."

Things even up in the end, and the man who has deep in his heart the idea of duty to the service and duty to the country will wait for better things and be contented with his lot whether it involve a hammock or a white-enamel bed. (J. S. Taylor, U. S. Navy.)

NAVY TRANSPORTS.

The problem of sending across the ocean a large American Army was considered impossible of solution by the German Government before the United States entered the war. It was considered that only a few thousands at most could be actually landed on European soil. The number of American troops who reached the war zone is now a matter of history. In less than 15 months from the outbreak of war it had passed the two million mark. From one-third to



Bed screens in pneumonia ward, Naval Training Station, San Francisco, Cal.



Bacteriological laboratory, Naval Training Station, San Francisco, Cal.



Medical ward in tents, Naval Training Station, San Francisco, Cal.



Surgical ward, Naval Training Station, San Francisco, Cal.

one-half of the total number were sent over in vessels manned and operated by the officers and men of the United States Navy. The Bureau of Medicine and Surgery of the Navy Department soon after the outbreak of war saw that the care of Army sick and Army wounded on the high seas would inevitably fall under its supervision, and that the work in the sick bays of these vessels would necessarily be carried on by the medical officers and hospital corpsmen of the Navy. The bureau provided sick bays, doctors and hospital corpsmen, medical and surgical supplies sufficient to adequately care for the Army sick on the eastern voyage and for definite quotas of Army sick and wounded on the western voyage of the vessels of the transport force.

The following extracts from reports tell something of the work of the hospital corpsmen on board these vessels, and together with the article of Pharmacist Dumphy illustrate some of the differences between the work on board the Navy troop transport and the work on board other naval vessels.

EXTRACTS FROM THE REPORT OF THE COMMANDER, CRUISER AND TRANSPORT
FORCE, JULY 1, 1918.

The wisdom of detailing a pharmacist to each transport is apparent to all concerned to relieve medical officers of responsibility in routine clerical work and Hospital Corps details.

Like other branches of the service, men of the Hospital Corps have received all practicable systematic training on board; this first-hand training and didactic instruction has been valuably and most generously supplemented by practical work in various civil hospitals of New York City, the arrangements for which have been constantly handled by Dr. J. G. Young (recently commissioned in the Medical Corps, U. S. N. R. F.). Similar facilities are offered in Philadelphia and at Hampton Roads. Hospital corpsmen receive instruction between trips through facilities under the control of the medical aid to the commandant of the district. The courses offered in New York City comprise: General nursing, operating-room work, laboratory, X-ray, embalming, dispensary, Carrell-Dakin, anesthesia, dietetics, genito-urinary.

QUOTATION FROM MEDICAL OFFICER, U. S. S. ———, OCTOBER 10, 1918.

"I wish to pay tribute to the junior medical officers and hospital corpsmen. Everybody worked cheerfully and apparently without thought for himself." (The men) "did not see their beds for 60

hours. 'The office force' (Hospital Corps) "were for an equal time at their typewriters, preparing sick lists and doing other necessary work, and the men who cared for the sick did all that was humanly possible."

EXTRACT FROM REPORT OF COMMANDER CRUISER FORCE.

INFLUENZA-PNEUMONIA ON CRUISERS AND NAVAL TRANSPORTS.

"In my opinion both officers and men on the ships of my command, in cruisers hardly less than on transports, have met this hazard of war most creditably. The commendation of medical officers and hospital corpsmen universally expressed either in written indorsements or orally by commanding officers, although not unexpected, is most gratifying."

PRACTICAL SUGGESTIONS.

SURGEON'S LIQUID ADHESIVE.

By Prof. E. FULLERTON COOK, PHILADELPHIA COLLEGE OF PHARMACY.

The usual methods followed to-day by the surgeon for fastening a bandage or dressing requires a strip of adhesive plaster, a safety pin, or the splitting and tearing of the end of the bandage. Even when carefully applied, especially when a head bandage or a spiral reverse is required, these methods of fastening often permit the bandage to slip and loosen. Furthermore, the cost to-day of adhesive plaster has become almost prohibitive and frequently this material is difficult and painful to remove.

These conditions suggested the use of a water-soluble liquid adhesive for fastening bandages, and the following is offered as an inexpensive and practical formula, readily prepared by any pharmacist or hospital dispenser:

Surgeon's liquid adhesive (Cook).

Liquid glue (a commercial glue, such as Dennison's, is readily obtainable in bulk)	1,000 gms.
Zinc oxide	200 gms.
Oil of eucalyptus	15 mls.
Oil of peppermint	15 mls.
Mix and rub to a smooth paste.	

This paste may now be used by the surgeon with a small stiff brush, like ordinary glue, but when used by this method the stock dries in the jar in a few days, and therefore it is preferable to pour it into a collapsible tube of the "eye-point" type, where it can be kept without drying, and from which it may easily be pressed when wanted and applied with the aid of the eye point wherever desired. In addition to neatly and quickly fastening the end of the bandage, one of the advantageous applications of this adhesive may be in fastening the overlapping edges of a head, or hand, or chest, or spiral reverse bandage, absolutely preventing its slipping.

It is also possible to use this adhesive in the application of a small protective dressing in vaccination or on a small cut or burn, by selecting a piece of paraffined gauze or other dressing material of suitable size, applying the adhesive on all four edges, and then holding it in place for a few moments. The dressing will be held firmly and when its removal is desired, a little warm water will release it without pain.

The insertion of the adhesive in a collapsible tube would seem to be the most practicable method for its use by a physician in office practice, but the adhesive can be made up in quantity in a hospital or dispensary, and a special syringe-like applicator, with a screw plunger and sharp nozzle point, be used by the surgeon in its application. In either of these devices, should the adhesive harden or dry at the outlet, a few moments of immersion in warm water will open it.

A "STICKER" FOR LOOSE LEAVES IN HEALTH RECORDS.

By E. P. WILKEY, Chief Pharmacist's Mate, U. S. Navy.

It is a fact well known to those keeping the health records in the Navy, that it is a problem to keep the loose leaves in the records intact after two or three years' use, or even less.

Many loose sheets with important data have been lost due to the fact that the small nitches in the top of the sheets have torn out. Pins and clamps of various descriptions have been used to hold these torn sheets in the health records. So that instead of having a neat record, we have some that look more like a package of papers pinned together.

To remedy this the following is submitted:

A piece of stiffened cloth, with glue on one side, the width of the health records, or about 4 inches long and five-eighths of an inch wide, with two holes corresponding to those in the medical sheets, may be pasted over the top of the torn sheet and we have the contents of the health record as good as new.

The above "stickers" could be made and furnished to the naval medical supply depots for further disposition.

CARD INDEXING OF HEALTH RECORDS.

By. M. A. BANKER, Pharmacist (T), U. S. Navy.

It is obvious from the amount and character of the correspondence now in circulation throughout the service, relative to health records, that the medical department of each ship or station should have a permanent record of every health record received or transferred. It often becomes necessary to transfer a man from a ship or station soon after he arrives and before his health record is received by the medical officer. On receiving ships this is by no means an uncommon occurrence. Where numbers of such transfers are constantly taking place the necessity of a permanent record of the health record is absolutely essential.

At some stations and aboard some ships data in connection with health records being received and transferred is kept in a special

journal for that purpose, the pages being usually arranged alphabetically and the names on each page in chronological order. It is evident that such a system does not meet the needs of the service at this time, especially at stations where health records are being received and transferred by hundreds or possibly thousands monthly. It appears to me that a card-index system is paramount in this connection. For this purpose the following card is offered:

[Front side of card.]

HEALTH RECORD.

1. Name _____ Rate _____
2. Date received _____ From (place) _____
3. Cowpox (date and result) (1) _____ (2) _____ (3) _____
4. Antityphoid (date) (1) _____ (2) _____ (3) _____
5. G. O. 294 complied with (date) _____
6. Health record transferred (date) _____ (Place) _____
7. Remarks _____

[Back side of card.]

_____ 19__
 Received this date from medical officer _____

the health record as described on opposite side of this card.

United States Navy.

The cards should be standard size, 3 by 5 inches, and files procured accordingly for special use in this connection.

Upon the receipt of each health record or the reporting of each man for duty, a card is opened. In case the health record does not arrive at the time the man reports, a skeleton record should be opened immediately, and same should be noted under "Remarks" and filed in a separate file marked *Skeleton Records*, in order that it may be written for if not received in reasonable time, date of letter to be noted on card.

All data required for lines 1, 3, 4, and 5 should be copied from the health record, and that for line 2 should be taken from the daily list of men received, same being furnished by the executive officer of the ship or station. In recording line 3, all cases that have not been vaccinated (cowpox) or need revaccination are discovered and their cards placed in a separate file marked *Vaccination Incomplete*.

This should be a calendar file and the cards placed immediately under the date for which the next vaccinations will take place, to facilitate their names being placed on the next list for this purpose. The same applies to line 4, for which a separate file is kept, same being marked *Antityphoid Incomplete*, and line 5 a separate file marked G. O. 294 *Incomplete*. Now, in case more than one of these entries is incomplete, first one is completed and the card is transferred to the other file until completed, when necessary entries are made on the health record and the card is filed in the general file.

As far as G. O. 294 is concerned in this connection, the identification tag should be made when the man first reports for either cowpox vaccination or antityphoid, or, in case it alone is wanting, he should be sent for immediately and have same completed. No cards should be filed in the general file until all lines, 1 to 5, inclusive, on the card are complete. The general file should contain all cards for health records present and complete. The cards should be arranged in strictly alphabetical order in both the general file and the dead file, to facilitate handling them without loss of time.

Then comes the dead file, to which the cards are transferred after line 6 is complete and back of card is receipted by person receiving the health record. In this file would be found the cards for all health records of men transferred, forwarded to bureau, etc.

The system set forth herewith, with very few modifications to suit the local conditions, has been in operation at the office of the medical aid to the commandant, thirteenth naval district, for the past two years, and in the opinion of the writer it has proved worthy of adoption throughout the service. It serves all purposes in connection with proper recording of health records, eliminating the too frequent handling of the record itself, and acts as a receipt and permanent record after the health record has left the station.

NEWS ITEMS.

Enlistments and enrollments in the Hospital Corps as well as in the entire Navy were discontinued August 8, 1918, by order of the Secretary of the Navy, and no voluntary enlistments have been allowed since that date. This was in accord with the policy enunciated in Congress that all men needed for the military and naval service must come through the agency of the selective-service law, administered under the rulings of the Provost Marshal General of the Army. During the months of August, September, and the greater part of October, no men entered the Navy. Early in October the Bureau of Medicine and Surgery requested that there be obtained by individual induction a monthly quota of men for the Hospital Corps, as follows:

From Eastern Mobilization Division to Naval Training Station, Newport, R. I., per month.....	150
From Central and Southern Mobilization Division to Naval Training Station, Great Lakes, Ill., per month.....	200
From Western Mobilization Division to Naval Training Station, San Francisco, Cal., per month.....	100
Total per month.....	450

When inducted into the naval service these men are given the rating apprentice seaman for hospital apprentice, second class. They are assembled at the Navy mobilization stations after release by their local board and go to a naval training station for the usual period of detention and apprentice seaman brigade training, after which they enter the Hospital Corps school to graduate as hospital apprentice, first class, upon completion of the course. It is believed that by this method of individual induction the Hospital Corps will continue to receive men especially interested in the work of this branch and men who are fully up to the high standard, which has been the rule in the past.

The Hospital Corps Schools at Newport, Great Lakes, and San Francisco will be the proving and testing grounds for the men obtained in this way. At these schools the interested hospital corpsmen will be distinguished from the disinterested and the apt from the inapt.

The total number of hospital corpsmen needed to maintain the corps at 3 per cent of the naval personnel is approximately 18,000, and if quotas requested are graduated from the Hospital Corps schools by July 1, 1919, the Hospital Corps will approximate that number.

The training given hospital corpsmen of the Naval Reserve Force has been much improved during the past few months because of the active interest taken by the medical aids to the commandants of naval districts who in many instances have developed excellent district Hospital Corps training policies with the assistance of naval medical officers and the doctors and nurses of civilian hospitals and clinics. The didactic and practical instruction of these men is more and more being made the equivalent of that given the hospital corpsmen of the Navy, most of whom have had the privilege of instruction at a regular Hospital Corps school. The day is not far distant when rating by rating there will be no distinction between the reserve and the regular hospital corpsman, except that the letters U. S. N. R. F. and U. S. N. appear after the individual's name and rating. The inducted men will all be Naval Reserve Force, and they will receive a training identical with that given the regular service men and their training will begin in practically every case in one of the regular naval station Hospital Corps schools.

To seagoing ships and to stations overseas more and more hospital corpsmen are being sent. The tendency is to send to sea, first, those who have been longest in the service without sea duty or duty overseas. In European waters the flow of hospital corpsmen from hospitals and other shore stations to sea is beginning. Soon it may be possible to flow hospital corpsmen on ships at sea to hospitals ashore, thus giving hospital corpsmen who have had many months at sea an opportunity to renew, in the environment of the hospital or shore station, contact with hospital and dispensary methods, and in that way be stimulated by variety of station and duty to maintain their enthusiasm for and interest in the manifold duties of their rating.

The Hospital Corps School at the Naval Operating Base, Hampton Roads, has been assigned a monthly quota selected from the hospital corpsmen of the naval district. At this school the men are being trained to develop their ability to handle the hospital corpsman's work on duty independent of medical officers. Upon completion of this special training these men go out to service often as the sole representative of the medical department on board. If they "make good" at this type of duty they receive adequate recognition by means of advancement in rating when they are able to qualify. This school places emphasis upon the importance of the clerical work of the medical department and gives these men an excellent all-around training, the purpose of which is to strengthen any weak points and to round out the good points of the individual. The work of this school is not easy, but the best man graduates first.

Men on independent duty on cargo vessels and the vessels of the Naval Overseas Transportation Service (N. O. T. S.) are bearing

large responsibility and enjoying a variety of duty, and many reports of their ability to assist in the solution of medical problems on board have been received. In the naval districts of the United States to which these vessels come for cargo and supplies the medical aid to the commandant or one of his assistant medical officers visits the vessel, talks with the hospital corpsman, discusses with him his problems, and helps him when necessary. In the ports of New York, Norfolk, and Baltimore there are medical officers especially assigned to the duty of supervision of the medical activities and personnel of the N. O. T. S. vessels when in port. To these medical officers especially the hospital corpsmen may confidently look for advice, guidance, assistance, and perhaps a certain amount of special instruction and training. The excellent work carried on by these men is of the utmost importance to the entire country, for their ability to handle efficiently the first-aid work of these vessels at sea has resulted in a saving of doctors for the needs of the Army and of the civilian population, who but for these men must have been called into the naval service away from the Army or the United States.

The Navy transports carry troops abroad and bring back a limited number of Army sick and wounded. They have been doing a wonderful work, and the medical departments of these ships have come in for a good deal of well-deserved praise. In the presence of routine work aboard these ships the hospital corpsmen have shown a desire to learn, a willingness to work and a capacity equal to the past traditions of the corps. In the presence of emergency their efficiency, devotion to duty and untiring efforts, often in the face of the greatest difficulties, have brought to the attention of the Bureau of Medicine and Surgery the highest sort of commendation.

A *reservoir* for the housing of excess hospital corpsmen for use on board the vessels of the transport force is contemplated at an overseas port where Army sick and wounded are placed on board these vessels for return to the United States. From this reservoir it is intended to place hospital corpsmen on board the naval transports for the western voyage, in excess of the regular Hospital Corps complement of the ship when their services are required for the care of the Army sick and wounded. These men will be handled somewhat as is the armed guard detail, which leaves its ship to go ashore and is again returned to sea either to the same or to another ship. No doubt hospital corpsmen who enjoy variety of duty and the stimulus of meeting emergencies will find assignment to this group most interesting, because it will offer them variety and hard work in the presence of emergency, with an occasional opportunity for a "run on the beach" in a port of the United States.

Hospital corpsmen with the Marine Force have been so highly commended for their ability and for their courage in these pages that

no further comment is necessary. They have shown themselves alone able to take infinite pains in the care of the sick, but strong and courageous enough to remain steadfastly at work under the heaviest sort of attack either in the trenches or in the field, thus materially aiding in the success of the engagement by their energetic, fearless and intelligent first-aid care and speedy evacuation of the wounded.

New York City has become a real factor in Hospital Corps instruction. The hospital corpsmen of the transport force while in port have the way into civilian hospitals and clinics open to them. The men of the N. O. T. S. share to a certain extent in these opportunities. Columbia University has again opened its doors to the Hospital Corps. A group of 100 men from Great Lakes have been given a short and intensive course at that university prior to being sent to hospitals for practical instruction. The hospital corpsmen of the district are guided toward the opportunities present in the hospitals of the city of New York whenever their actual services in the care of the sick of the district can be spared.

In Philadelphia the Philadelphia College of Pharmacy has offered a short course (three months) for hospital corpsmen and under the guidance of the medical aid to the commandant of the fourth district. The bureau expects that these men will go to active duty in the service well grounded in their work and with perhaps an especially good start toward proficiency in that "hard to learn" field of the hospital corpsman pharmacy.

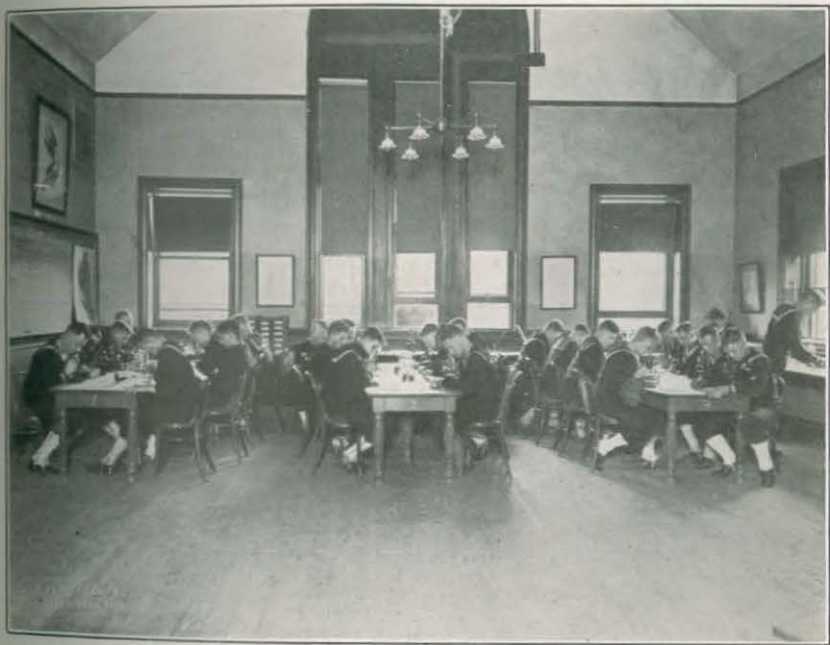
The outflow from the Hospital Corps has increased as the corps has grown: In July, 1918, 247 left the Hospital Corps, in August 212, and in September 130, making a total of 589 for three months. These men left the Hospital Corps for the following reasons:

Expiration of enlistment.....	8
Discharged by medical survey, death, and other reasons.....	7
Change of rating.....	43

Of the 80 who left at the end of their enlistment 54 reenlisted, and many of the remainder reenrolled in the Hospital Corps Naval Reserve Force. Of the 439 who changed rating to other branches it may be said in general that by their leaving not only was the Hospital Corps benefited, but also they themselves. Most of these men (77 per cent) had been in the service less than six months, and 94 per cent of them changed their rate on shore stations before there was time for them to be sent to sea. Last spring when the inflow to the Hospital Corps was at the rate of about 1,000 men per month, it was easier to get in the Navy through the Hospital Corps door than through the door of other ratings, and many of these men who have changed their rating had no intention of remaining in the Hospital Corps when they enlisted. It is found that most of the men who enter the Hos



Columbia University, New York. Intensive course for hospital corpsmen.



Columbia University, New York. The microscope, its care and use.



Columbia University, New York. Anatomy and histology.



Columbia University, New York. Urinalysis.

pital Corps find its work sufficiently interesting to stay. Some, of course, leave before they have had an opportunity to learn enough about their work to get its interesting features, others are really not well adapted to the corps and are better off in some other branch. The policy of the Bureau of Medicine and Surgery has been a liberal one, that of the open door. If a man, after a reasonable length of time, desires to leave the Hospital Corps the bureau places no obstruction in his path, though often it may be difficult and embarrassing to lose a good hospital corpsman who has had a long training under the Bureau of Medicine and Surgery. To see such a man, after having done good work in the Hospital Corps, enter an officers' material school, or an aviation training station, or go to the Naval Academy, is an indication that the men of the Hospital Corps have open to them every possible opportunity for their personal advancement. Those who learn in the corps find opportunity to advance rating by rating as they learn the duties of those ratings, and those who stay long enough in the Hospital Corps find a variety of work, of station, and of experience which makes their lives interesting and improves their ability and adds to their knowledge. Those who leave the corps because of lack of interest or discontent improve the opportunities for those who stay.

Opportunities for advancement in rating.—An estimate has been made that approximately 1,000 pharmacist's mates, first class, and chief pharmacist's mates are needed at this time to fill vacancies, so that every man who is interested and on the job, and who knows the game, may rest assured that his opportunities in the Hospital Corps are in no way limited as soon as he is able to demonstrate his fitness for advancement in rating in accordance with the eligibility rulings laid down by the Bureau of Navigation's annual circular.

The influenza epidemic.—Early in September, 1918, the pandemic of influenza which had been following the lines of travel from one part of the world to another in a more or less severe form reached the vicinity of Boston and began to attack, first, the naval population and then the civil and Army population in a most severe form. The navy yard, naval stations, encampments, special schools and complements of district and other vessels were hit and hit hard. The cases taken sick after a few hours or a day or two of incubation mounted up and up, day by day, until in the short course of a few days they had reached thousands of cases. The naval hospitals filled first to capacity and then beyond normal capacity. The moderately sick had to be taken care of in their barracks in order to make room for the

acutely sick in the naval hospitals. Calls for medical officers, more nurses, more hospital corpsmen were made and, to a considerable extent, met.

The disease had hardly struck the vicinity of Boston when it appeared at the Newport Training Station, flared up in the vicinity of Philadelphia, took firm hold among the thousands at the Great Lakes training station, spread to Norfolk, appeared in New York, Charleston, and Washington; attacked the cities along the Gulf of Mexico, reached out to Puget Sound, and then to San Francisco, San Pedro, and San Diego, all in the course of a few weeks. As a tidal wave rises in a short space of time, reaches its maximum, and then subsides, to leave on the beach a lot of wreckage, so this epidemic of "flu" or "La Grippe" suddenly appeared, attacked thousands of persons, killed strong men by the hundreds, and in the course of a few days disappeared to a great extent, leaving behind hundreds of persons sick with pneumonia, many of whom died. As the naval communities were stricken, so were the civilian and Army communities, and all suffered very severely.

Beginning early in September, by the end of October the worst was over in the United States. In that short period the number of men who died in the Navy and in the Army and the number of men, women, and children in civil life who died from this disease was appalling. It is estimated that the preparations for continuing the war were set back at least a month. The calling of thousands of men to Army cantonments from the draft was held up, the transfer of thousands of men overseas was delayed. In the civil communities, theaters, moving-picture shows, schools, other places of public gathering, and in some places even the churches were closed. The Liberty loan campaign was markedly interfered with. Volunteers called in to assist in the care of the sick, hospital corpsmen of the Navy, friends and relatives of the patients, doctors and nurses were attacked in about the same if not slightly greater proportion, and the death toll and sickness rate among those who helped in the care of the sick was very high. In a few places in the United States hospital corpsmen were in training at Hospital Corps schools and in the district training policies. The schools were temporarily discontinued, the men taken out of training and sent by the hundreds to hospitals, training stations, and other places to care for the Navy sick. In the presence of this medical emergency these young men came for the first time in contact with the severely sick, with death and suffering. The conduct of these young men in the presence of this depressing and difficult situation was most admirable. The willingness of hospital corpsmen throughout the entire Navy to work and to work hard, even when extra hours and fatigue meant increased liability to contract the disease, has proved to everyone in the Navy



Columbia University, New York. Chemistry.



Columbia University, New York. Diets for the sick.



Columbia University, New York. Dietetics.

that the personnel of the Hospital Corps is of the best, that their spirit and morale is of the highest, whether in the presence of an emergency at sea, on the battle field, or in the front line fight against epidemic disease. As the cases of influenza in the naval communities lessened, there was an opportunity in a few places for the hospital corpsmen to be of assistance to the civil community where the dearth of medical assistance in the presence of so extensive an epidemic brought about most serious conditions. From many civilian sources where hospital corpsmen were temporarily assigned to assist the civil population, the Bureau of Medicine and Surgery has received the highest commendation for its hospital corpsmen. From naval sources, there has come to the bureau the most gratifying news of the way in which hospital corpsmen conducted themselves during this trying time. From among these many reports, that from the commanding officer, United States Naval Hospital, Newport, R. I., is quoted:

It is a source of gratification that, notwithstanding the unprecedented influx of patients, this hospital had ready a comfortable bed and suitable bedding and equipment and was prepared to provide proper nursing and hospital corps attendants for every patient admitted without any delay whatever. The conditions of this epidemic have closely simulated those of advanced hospitals close behind the firing line of engaged armies. The work of the staff, both medical and nursing, and of the pupils from the Hospital Corps Training School temporarily pressed into this service, has been worthy of the highest commendation and, in my opinion, the experience gained by men from the school will be of the very greatest value to them in their future development in the work of their special corps.

Also some sentences from the Commanding Officer, U. S. Naval Hospital, Mare Island:

I have nothing but words of praise for the entire personnel. All have shown devotion to duty and a most commendable zeal in the performance thereof. Those who have recently joined have shown a willingness, adaptability, and readiness to grasp the needs of a situation and meet it, which has been a constant surprise and pleasure to me. The hospital corpsmen have proved to be fine, clean, young Americans, who are interested in their work and who learn their duties quickly. [Ed.]

*Extracts from letters of regimental surgeons, Sixth Regiment,
Marines.*

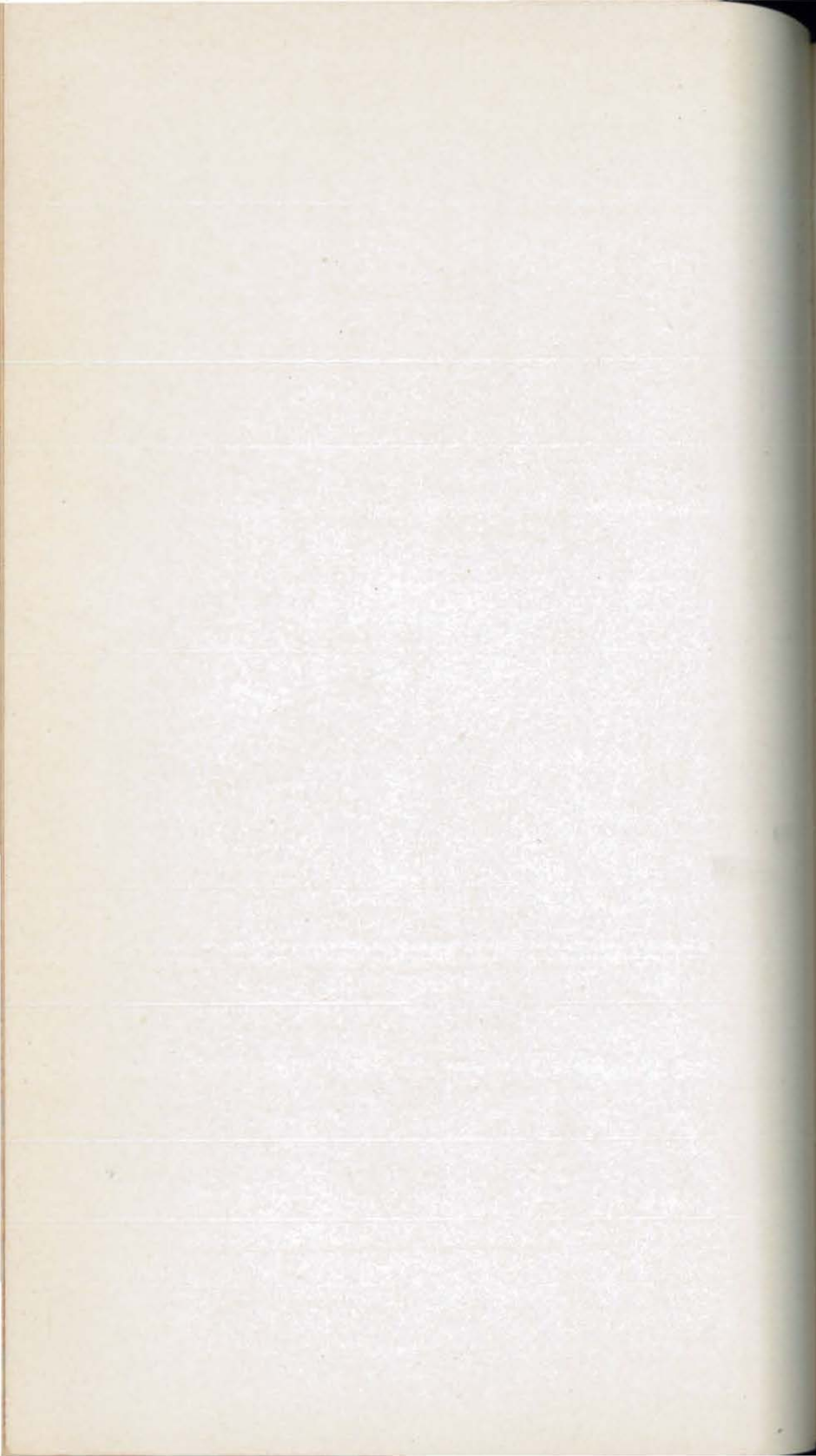
(1.) "You have read of our accomplishments and of our glorious attainments. What the marines have done in the past few months is now history, much of which is public information, but there are the little personal experiences, and particularly the experiences of the naval doctors and the naval hospital corpsmen, which are not to be found in print. In fact, very little is known of the work of these comparatively few and apparently slight credit is given. I

have always felt that the hospital corpsmen serving with the Marines received too little publicity or credit for their work. After the work that they have done over here, they will no longer be necessary evils but desired and creditable additions. The changed attitude and the high regard in which these men are now held by both officers and men is most noticeable. What commanding officers of the various units have said about many of these men will be read with much interest when they have been forwarded, and as these are to be filed with each man's record, they will never be forgotten. I hope that the bureau will appreciate the hardships that these men have had to endure and the disadvantage that they are serving under away from real Navy establishments. I was pleased that what I had previously written was of interest to other members in the bureau. There are so many daily interesting occurrences over here that it is rather difficult to know just what will be of particular interest to you.

Our duties in the field are entirely limited to first aid, but when the boys are pounding away after the Boche or when he is sending us compliments there is a great deal to be done. The Hospital Corps with the battalions are assigned to companies more or less permanently in order that they may learn the characteristics of the men with whom they are associated and that the men may become personally attached to their respective hospital corpsmen. From experience we have learned that greater efficiency is thus attained and our relations strengthened. The hospital corpsmen take much pride in their companies, and the officers and men in the companies become very attached to their hospital corpsmen. Frequently when we feel that we must make changes company commanders object quite seriously. In action the latter are more or less insistent that they have their own corpsmen. I have had very, very many compliments paid to the wonderful spirit and many acts of bravery of these boys, and to them much credit is due for the ever-existing high morale of the troops in battle. All have been commended in battle and not one criticized. Not one has ever failed to do his duty, and many times different ones have performed heroic acts beyond the call of duty. When our troops attack in waves through heavy machine-gun fire, the hospital corpsmen follow close behind, attending to the fallen, and as soon as circumstances permit turn and act as stretcher bearers. One corpsman, who will receive the Croix de Guerre, cussed out some of the men ahead of him who were momentarily held up before a machine-gun nest and told them to "get the damn Huns," as, if they (his men) fell, he was there to care for them. They plunged ahead and cleaned out the nest with quite heavy losses. This is but one of many examples where a hospital corpsman has been a great moral force in a critical situation. Then, we have those assisting the battalion surgeons at their stations, which vary greatly



Columbia University, New York. Weights and Measures.



according to terrain and the nature of the fighting. Sometimes battalion aid stations are cellars, dugouts, caves, culverts, narrow ravines, gutters, open fields, woods, stone walls, or any place affording protection. Sometimes there is no protection, and I thank God that during these times we have been too busy to consider our location. There have been times when all the station a doctor has had has been a quickly dug hole in the ground which he and a few of his men have covered over with boughs to afford some slight protection from shrapnel and fragments from high explosives.

Then there is the regimental station. For three weeks I worked in an old farm house. Drs. Farwell and King were with me and we had about 10 corporals. Two days before being relieved the building was demolished. Dr. Mack had come up from his station to shave and change his clothes, which had been exposed to a heavy concentration of gas. His toilet was rudely interrupted. Ten men were quite seriously wounded. We had been shot at so much there and almost every piece of ground about had been so well peppered that we had come to believe that a horseshoe was suspended from the sky. Some one must have cut the string. Forced to move, I took to another building. One half hour before being relieved this building was the recipient of a direct hit. The concussion damaged my left ear but beyond that no one was injured. Dr. Farwell was at headquarters and sent me word to move immediately. A few days later I visited this place and there was scarcely a stone standing. Undoubtedly the Boche had gotten a pretty good range on our abode. We had wine cellars (empty ones) which offered us considerable protection.

If we were not too busy when things were warmest, we took to the cellars, but I believe the heaviest shelling we ever had was one night when Chief Pharmacist's Mate Whitacre and some of the other boys and I were dressing some very seriously wounded men. The building just swayed and there was a deafening roar. There was nothing to do but carry on. I could cite many experiences but do not want to bring in the personal side too much.

The above incidents were Bois Belleau happenings. We thought we had found the war, as we say, and it is true we had, but the few hours in our next engagement south of Soissons brought to us real war as the historian and the novelist picture it. The 19th of July was weeks of former hardships and suffering just crowded into 24 hours. It is the blackest day in my calendar. Our losses in a few hours tell what our work must have been. Some day I can relate just every experience of that day and it will be interesting I am sure. We had a cave in which we could have put 300 lying cases at one time. We had 250 for a number of hours and the scenes which we were forced to have before our eyes are now horrible nightmares.

The suffering of the many wounded, their cries, their pleadings; the mental anguish of the "shell-shock" cases and our utter helplessness are experiences we never want to see repeated. It was a case of ammunition and guns, first; food, second; wounded, third. Medical supplies were, of course, included in the latter. This gave a few hours before our occupancy was a German aid station and very fortunately contained much material useful to ourselves. The litter, cumbersome adjustable carriers, had *had their handles sawed off before the Hun left* but we fooled the old Boche for we supplied them with the same litters to our *captive* litter bearers. We had a couple hundred men working from the front collecting points to our station when during the night a great deal of gas was thrown over. We, of course, had to wear masks for several hours to carry on our work of treating and evacuating hundreds of wounded. When a number of Boche bearers were gassed so that they had to be evacuated it was a case of getting a dose of their own medicine.

We have used prisoners on a great many occasions as bearers, and they seemed well trained along those lines. Some are so underdeveloped and youthful looking that one rather hates to demand such heavy labor from them. During the darkness of the night we succeeded in clearing the field of wounded, but it was a tremendous proposition racing with approaching dawn. When we were relieved early the morning of the 20th and everything had been turned over to the French I became aware that I had actually stood up on my feet 25 hours. During the night my legs and arches ached terribly; by morning they must have been anesthetized. Late the night before we had gotten a little bread, a can of tomatoes, and some coffee. This was the only food with the exception of hard-tack we had had for over 48 hours. The hospital corpsmen worked with never a complaint, never a sign of discouragement, but with a spirit worthy of the highest praise.

The 20th we went into reserve, but that night we were shelled out of our woods and had to take to an open wheat field during a heavy storm. We were all so exhausted that we were far more willing to lie undisturbed, taking our chances, than to move out, but orders came and left us without a choice. Funny things are always happening, and this was to be no exception. The next morning I was complaining that the water bugs disturbed my sleep after I had found a shell hole, for they crawled over my neck and face, when one of the boys, a very droll type, said: "That is nothing, doctor. I got into a latrine, and I was too tired to move out, so slept there all night!" We later headed for a rest area, but it was a week later before we were privileged to enjoy a period of rest. Since March we have had but two weeks at any time in rest.

This letter has been waiting to be completed for a number of days, and now I want to get it off before we are in again. We are now en route and have stopped off for a day or two. When you receive this letter you will be reading reports of our accomplishments once more in battle. We know not what the approaching days and weeks hold for us, but we can only hope that we may repeat our former glorious deeds and thus add another page of history to the Marine Corps Own, in which the naval surgeons and naval hospital corpsmen have always taken a prominent part, although little known publicly.

(2) We are in rest for a few days, and it is really our first opportunity to even attempt reorganization since we went forward in March. You no doubt have some idea from the casualty reports of the need for a complete regimental reorganization, but that gives you no information as to the important positions occupied by those killed or evacuated. Our own department has suffered quite heavily, with 1 dental officer killed, 8 medical officers evacuated (sick or wounded), 34 hospital corpsmen wounded, and 2 hospital corpsmen reported missing. Fortunately we have sufficient replacement hospital corpsmen to meet deficiencies.

The division, brigade, and regimental staffs are making my work a pleasure, and as for my Hospital Corps I could ask for no greater loyalty or truer devotion. I have never served with such a splendid body of men, and the recommendations forwarded to general headquarters speak for the distinguished services of these men.

The work of Chief Pharmacist's Mate Strott, United States Navy, has been exceptional. He has been awarded the Croix de Guerre by the French Government for his distinguished services.

You, as the head of this little band, my dear sir, may well feel proud of the behavior and accomplishments under the severest tests of your representatives. I regret you are not here to see their glorious deeds, but you will be thrilled as you read what various unit commanders have written in appreciation of their valor and the devotion to duty when the greatest personal sacrifices were demanded of them. I am now preparing copies of commendations for forwarding that each officer and man may have his filed with his official records, but the following recommendation, in a few words, expresses a summarized opinion of our work:

I (the commanding officer) recommend that suitable action be taken in recognition of the medical officers of the regiment, who have performed Herculean labors in treating and evacuating the wounded, and for the Hospital Corps, who performed their duties under heavy shell fire with a fine disregard for personal safety.

CLIPPINGS.

WHAT ARE NAVY HOSPITAL APPRENTICES?

SOME ACCOUNT OF THE TRAINING WHICH THE BUREAU OF MEDICINE AND SURGERY AIMS TO PROVIDE FOR ITS ENLISTED PERSONNEL.

By WILLARD CONNELLY, Chief Yeoman, U. S. N. R. F.

(Extract from "The Midland Druggist and Pharmaceutical Review," Sept., 1918.)

Everyone has an idea of the colossal activities of the Red Cross in this war, but to say "Red Cross" brings first to mind the relief work for our disabled soldiers, while the methods of caring for sailors, though fully as adequate, are less generally understood. Who attends upon our Navy men and our Marines when they fall sick or suffer injury? Active duty with the fleets in the war zone, especially with the destroyer flotillas now, is fraught with hazard. The valorous fighting of the Marines, day by day, demands heroic ministrations on the part of the Navy medical force in France.

It is the hospital corpsmen who rush to the aid of whoever among our sea-going warriors may become stricken, the hospital corpsmen who wear the little red cross on the left sleeve. These capable blue-jackets may be detailed to duty in naval hospitals along the Atlantic coast, in France, or in England. They may be assigned to the sick bay aboard a dreadnaught or a transport, they may on a destroyer be the sole representatives of the medical department, entrusted with the health of both officers and men.

Hospital apprentices are not pharmacists, but more. They are all-round surgeons' assistants. It may not even be said that their training is based on pharmacy, though pharmacy is assuredly a cardinal study in their curriculum of instruction. For that reason—and here is the point to which I have been leading up—young men possessing pharmacal knowledge are intensely interested in what the duties of a hospital corpsman entail. These drug clerks can appreciate the enormous value of medical training which turns hospital attendants into rated pharmacists' mates for the service. The Bureau of Medicine and Surgery maintains a high standard unexcelled in the enlisted ranks, and its men in training are of best character and nearly all of at least high school education, including a great many college graduates. If, as Secretary Daniels has predicted, the Navy grows to the strength of a million men, additional apprentices will constitute one of the very first branches of the service to fill its quota. The Navy can not grow too fast for the Hospital Corps.

At the University of Minnesota medical and dental colleges the course of instruction for hospital corpsmen now rounding out its first year's trial is an eminently lasting success, a pace setter, conspicuously efficient. It is typical of the heights to which Surgeon General Braisted's bureau aspires. Here are a hundred men, every four months, studying, experimenting, operating, assisting, learning about the human organism six hours a day. The morning hours are given to lectures and laboratory exercises, afternoons to dispensaries and hospital, and the best way to present a graphic picture of the course is to sketch the high lights in some of the foremost subjects.

Bacteriology, for example, is significant. Here the men start each period with a lecture in the amphitheater, then go directly into the laboratory to put into practice what they have heard. They make cultures of bacteria with ordinary media, isolate and identify, after which they examine the commoner pathogens, as the bacilli of diphtheria and tuberculosis, the pneumococci, streptococci, staphylococci. Woe to the bluejacket whose mate discovers in his throat one or two million more streptococci than are supposed to congregate at one time! Those "strops" immediately become as superfluous as a dozen civilians who gather together in a street in Berlin. The work proceeds with lectures on the transmission of infection, as by contact, food and water, insects, coughing, etc. Another important topic is disinfectants, and practical disinfection of instruments, hands, wounds, field of operation, sick bay, as well as disposal of infected material. It is easy enough, you say, to dispose of such material at sea, but on land this precaution is not always as readily carried out unless due emphasis be laid on its importance. Such corpsmen who are detailed to duty on land, as in naval hospitals, find such lessons in sanitation pertinent and useful. This course then concludes with bacteriologic examination of water and some interesting work in urinalysis, for every hospital apprentice must be able to test specimens for albumen, sugar, or sediment immediately upon request of the naval surgeon in charge.

It is perhaps not necessary to give full particulars as to the pharmacy and materia medica which the sailors take up, as these subjects are familiar ground to the druggist. But it may be said that after six lessons in elementary chemistry, including carbon compounds, benzol ring and common metals, the apprentices pass to prescription forms, make the typical liquid mixture, powder, pill, tablet, and salve, then go into general and local anesthesia. Next come soporifics and sedatives, with the opium series and the ever-useful atropin as an offset, then chloral, bromides, and magnesium sulphate. The course extends through salicylates and antipyretics, purgatives (with due warning about croton oil), specific, and alkali therapy, soda (not the fountain kind), mercury and antiseptics, quinine, ethylhydro-

cuperin, emetin, are stressed, and of course salversan, which in the dermatology dispensary the men learn to inject, as well as salicylate of mercury. The use of the great war remedies, Dakin's solution and dichloramin-T, is fully discussed.

A word must be given to anatomy, probably the basic study of all for the well-rounded hospital apprentice. Here the bluejackets gather thrice weekly for lectures in the great amphitheater, and an extra period is allotted the dissecting laboratories. Before a man has had a chance to forget what he saw on charts, skeletons, or wax models at the lectures, he is awarded the opportunity to examine in human cadavers each point described during the week. Here again an indelible impression is made on his mind. If he ever has a pneumonia patient he knows just how that patient's lungs are affected; if an abdominal patient, the corpsman has explored that area at school, and after hearing a recital of his shipmate's symptoms the apprentice can make an intelligent report to the surgeon. No structural unit of the human machine is overlooked—in turn the bluejackets study tissues, joints, muscles, arterial distribution, respiratory apparatus, alimentary canal, urinary system and skin, nervous system, and the sense organs.

"I feel so thoroughly acquainted with myself," said one of the sailors after passing well in the anatomy course, "that I am calling myself by my first name all the time."

New to hospital apprentices is the work in dentistry offered them at the university. There are four main subjects taken up: Oral hygiene, dental anatomy and prosthetics, operative dentistry, and oral surgery and extraction. The first means how to keep the teeth clean by warding off such unwelcome visitors as calculus, gingivitis, pyorrhea. The men learn the use of various dental instruments, as the scaler and explorer. They clean the teeth of one another, report pathological conditions if any, then proceed to examine civilian patients, of whom hundreds attend the dental clinics daily. A feature of this course is a series of important talks on the dangers of systemic disease so often traceable to the teeth only, as arthritis, kidney, heart, and stomach trouble. The laboratory work in prosthetics has proved very engaging, and the reason is that here of all courses the men take an intense personal interest, because they are called upon to model their own jaws in plaster, after taking upper and lower impressions with the rubber-modeling compound. Huge delight is evident when a sailor spots a crooked tooth in the cast of his neighbor, and an operation to correct the "leaning fence-picket" is at once suggested. Fillings of amalgam and cement are mixed in operative dentistry, then the corpsmen prepare cavities and fill temporarily; in short, they learn to "stop" an ache in case

the dental surgeon is not immediately available. Daily practice in the extraction clinic is held, and the men are taught to inject novocaine and to extract, as well as to make radiographs where abscesses are suspected.

The practical nursing, given at the university hospital, embodies assisting in the operating room with sterilizing and anesthesia, bathing patient and giving hypodermics, preparing poultices and tincture of pentine stupes, enemas, enteroclysis and hypodermoclysis, catheterizing, eye, ear, nose and throat irrigations, post-operative care and charting. Bandaging, including plaster casts and adhesives, and dietetics are the other branches.

So appetizing has the dietetics or invalid cookery training proved to be that several corpsmen have occasionally made their escape from other classes to come in and mingle with the lucky section. The instructor once detected two or three of these stray dogs, appearing very busy. She approached one of them, who was peering inquisitively into a stove of promise.

"Are you a member of this section?" asked the instructor.

"No'm" (he manifested dyspnoea), "I was—I was looking for my notebook!"

The only course for hospital corpsmen at the university is taught by a member of the medical, dental, or hospital faculty in the work in clerical procedure and sick-bay management, in charge of a chief pharmacist's mate who has sailed the seas from Hongkong to Nova Zembla. This vitally important record work consists of instruction in drawing up such forms as the binnacle list, morning report of sick, taking inventory of medicines on hand, orders for supplies, and monthly report to the Bureau of Medicine and Surgery. The distinction in illness contracted "in line of duty" and "not in line of duty" is explained, and tips are given on methods to expose malingering. A corpsman going to sea and rated pharmacist's mate indeed has reason to feel he is going to take a position both of responsibility and authority, and he is proud of it.

Daily stretcher drill on the Minneapolis parade grounds is a feature. Here the apprentices follow up a sham battle, bandage the "wounded," applying antiseptics or first-aid splints, and bear them on stretchers or carry them over their shoulders to the waiting ambulance. Whether the corpsmen are detailed to duty ashore or at sea, this practice is highly advantageous, for it teaches the students to think and act quickly, it familiarizes them with conditions on the field of battle, it inspires self-confidence, and promotes efficiency.

Such an excellent contribution to the fitness of our sea-fighting personnel as is given by the University of Minnesota to 300 men annually is a war-time aid of the very highest merit. The wealth of facilities at the university constitutes a standard most worthy of

emulation, and it is believed that other medical colleges also adequately equipped are considering a similar service for the Navy. Commander Warren J. Terhune, commandant of all United States naval-training schools in Minneapolis, has been assured by many of his hospital corpsmen that after the war they intend to engage in pharmaceutical work on a broad scale, while others expect to return to college to study for their degrees in medicine or dentistry. No better gateway to professional life exists than the Navy Hospital Corps.

PHYSICAL DISINFECTANTS.

THEIR USE IN THE PREVENTION OF COMMUNICABLE DISEASES.

[Extract from Public Health Bulletin No. 42, United States Treasury Department.]

Disinfection is the process of destroying or rendering harmless disease-producing germs. In a broader sense the term may also be applied to the methods used in the prevention of disease by the extermination of disease-carrying animals (insects, rodents, etc.).

In the selection of a disinfectant the following factors should be considered: (1) Availability, (2) efficiency, (3) ease of application, (4) danger to man, (5) deleterious effect on materials, (6) length of exposure required, (7) cost.

(1) *Availability*.—This will vary according to locality, time, economic conditions, and the purpose for which the disinfectant is to be used. In cases where heat is applicable this agent can almost always be procured under any condition, hence it heads the list of all disinfecting agents, both as to availability and efficiency.

(2) *Efficiency*.—This has reference to the killing power under the conditions existing in any given case. It is dependent upon the penetrating power of the disinfectants, likewise upon the temperature and, in the case of gaseous disinfectants, upon the degree of humidity.

(3) *Ease of application*.—This needs no elaboration. The facility with which any given process of disinfection may be applied in a particular case, however, should not cause it to be chosen if it will not be effective, or if the danger to man or to property or the cost will be excessive.

(4) *Danger to man*.—In general it may be said that any agent that is capable of killing microorganisms may, under certain conditions, exert some deleterious influence on man. No disinfectant is fool-proof. While a majority of the coal-tar preparations are harmless if used properly, one can readily understand that they may be dangerous if they find their way into the hands of irresponsible persons. The most dangerous disinfectant is hydrocyanic-acid gas; probably the

least dangerous of chemical agents is chlorinated lime as employed for the disinfection of drinking water.

(5) *Deleterious effect on things disinfected.*—In house disinfection especially with gaseous agents, where utensils, furniture, clothing and other textiles are exposed to the action of the disinfectant, considerable, even irreparable, damage may be done, owing to certain chemical or physical reactions. Thus corrosive sublimate (mercuric chloride) corrodes metals, sulphurous acid bleaches textiles and weakens papers, heat shrinks leather, some disinfectants may leave stains on others an undesirable odor.

(6) *Length of exposure required.*—This may be an important determining factor in certain cases where time is limited.

(7) *Cost.*—This is to be considered from two standpoints: (a) Cost of the disinfecting agent, and (b) cost of things destroyed, or reduction in the value of things disinfected.

HEAT.

Probably the use of heat in some form as a disinfecting agent is better known than any other disinfectant. Heat may be used in three forms: (a) Incineration, (b) dry heat, and (c) moist heat.

Incineration.—This needs no explanation, for all will agree that destruction by fire is the method par excellence for disposing of useless refuse and infected materials of but little intrinsic value.

Dry heat.—This form of heat, as usually applied, is of but little use for practical disinfection against infectious diseases. It is used quite extensively in laboratories for the sterilization of glass apparatus and may be used as an emergency measure in the sterilization of surgical dressings. For most purposes moist heat will always be available where dry heat is to be had, and is more effective.

Moist heat; steam.—With the single exception of incineration moist heat is our most efficient disinfecting agent. It may be used in the form of steam or heated water. Its efficiency varies with the temperature obtained, provided penetration is good. Hence the most effective form would be steam under pressure, which gives a temperature of about 120 C. when the pressure is raised to 15 pounds per the square inch. This temperature will sterilize in 20 to 30 minutes. Steam under pressure requires the installation of apparatus which, on account of its size, must usually be permanently located, and articles to be disinfected must be transported to it.

Steam at 100 C. (live steam not under pressure) is a highly efficient disinfectant. A longer exposure is required than when steam under pressure is used, and if spore-bearing organisms are to be killed repeated or prolonged exposure is necessary. Any apparatus in which the material to be disinfected can be placed over boiling

water and the steam held around it by some form of hood can be utilized for this purpose.

Moist heat; boiling.—This method of applying moist heat is the most available, and it is highly efficient. It ranks with live steam in efficiency, but probably its penetrating power is somewhat superior to that of steam at 100°, especially for short exposure. It is applicable for the disinfection of linen and cotton fabrics, and may be used for wool and silk material; but the damage to the latter will be greater. It is especially useful in the disinfection of dishes, surgical instruments, and sick-room utensils, such as bedpans, urinals, etc.

Moist heat at degrees lower than the boiling point.—Disinfection may be accomplished by the use of heat at temperatures below 100 C., but this method should be employed only where some deleterious effect of the higher temperatures is to be avoided. For the sterilization of cutting instruments, exposure to 80 C. for 20 minutes will give good results. The pasteurization (partial disinfection) of milk, cream, and other foods is effected by heat at temperatures below boiling.

SUNLIGHT.

The direct rays of the sun are known to be highly germicidal; they will kill most bacteria in a short time if the exposure is complete. Unfortunately disinfection is needed in many places which can not be exposed directly to the sun's rays. Moreover, sunlight is a variable quantity, dependent upon weather conditions, time of day, season, and other factors. It is a useful adjuvant to other disinfectant processes.

DIFFUSED LIGHT.

This agent has a less pronounced germicidal effect than sunlight, but does possess some disinfectant power. A much longer time is required to kill organisms, and on this account the effects of drying, as well as the immediate environment of the organisms, are to be considered. So many organisms resist the action of diffused light and of drying for a considerable period that these agencies alone can not be relied upon for thorough disinfection, unless the exposure is much longer than is usually practicable. A few organisms, such as the meningo-coccus, treponema pallidum (the specific organism of syphilis), and certain others, have been shown to be highly susceptible to the germicidal action of light and desiccation.

AIR.

Air of itself has little if any germicidal action. Though oxygen in the nascent state has some effect on organisms, atmospheric oxygen is practically without effect. It prevents the multiplication of an-

aerobic organisms, but does not kill them. However, the airing of apartments and infected material is of value, and advantage may be taken of any germicidal action of sunlight or diffused light. Drying, which is favored by exposure to circulating air, is of recognized effect in hastening the death of microorganisms.

AN ADVENTURE IN FRANCE.

[Extract from the Semaphore, August, 1918.]

A story showing the care we are taking with our men in France and at the same time a tribute to the Hospital Corps of the Navy, told by a wounded marine now convalescing at the hospital. At the taking of Cantigny the marines in the front line were told to advance in open order a certain distance and dig themselves in. He went forward as directed, dug his little shelter in the ground about two feet deep, and was just preparing to fire when a shrapnel shell burst nearby and two fragments of it struck him, wounding him badly in the side and leg. He says he lay there unable to move, bleeding badly, hopelessly wondering what would become of him. Ten minutes later he felt a hand reach beneath the neckband of his shirt, catch him under one arm, and he was quickly slipped out of his shelter and onto the shoulder of a hospital corpsman. "And he certainly did hotfoot to the rear with me" is the way he puts it. "and the funniest thing about it is that he didn't choke or hurt me when he took hold of me and that trip to the dressing station was the most comfortable one I ever had." It shows that the corpsman was right up with the front-line men, that it didn't take him long to spot the wounded man, and when he did, without weapons and without the incentive of having a part in the fighting, with the Red Cross on his arm he "took a chance" across the open spaces and brought his wounded man back.

CHARACTERISTICS OF MODERN WOUNDS.

[Extract from War Surgery and Medicine, July, 1918.]

Aside from bullet wounds with punctiform openings, practically all wounds are contaminated. Shell wounds are particularly gross on account of the destruction of the tissues, the entrance of infected foreign matter gathered during the flight of the missile, and the retention of the shell fragment itself in the tissues. These factors demand urgent and energetic treatment, and make clear the obligation

tion on the part of the regimental medical officer to send back the wounded man as soon as possible to the point where the disinfection of the wound may be carried out, at the same time placing him under the best conditions possible for transportation, after the dressing and immobilization of the traumatized parts.

DUTIES OF FRONT-LINE MEDICAL OFFICERS.

The duties of the sanitary service at the front during action may be summarized as follows:

1. To rescue the wounded man as early as possible and to carry him to a place of security.
2. If the patient can be transported, to see that he is quickly evacuated to a sanitary formation farther back, after dressing and immobilization of the wounded parts.
3. To maintain and give necessary attention, for a few hours in a sufficiently equipped dressing station, to the severely wounded who are shocked or untransportable.
4. To carry out proper treatment of hemorrhage and visceral lesions for which intervention is of extreme urgency.

The organization for picking up or rescue of the wounded differs according to whether it occurs during immobile trench warfare or in the open field during attacks.

SALVAGE OF THE WOUNDED DURING IMMOBILE TRENCH WARFARE.

Usually presents little difficulty or special danger. The chief question requiring discussion is that of the passage of litters along the communication trenches. There is an evident incompatibility between the litter, a rigid, long, and cumbersome appliance, and the trench, which is a narrow, tortuous passage with sharp angles, lying deeply between the two high walls which are indispensable for security. The litter should be comfortable for the wounded man; light, so that its own weight, added to that of the patient, does not make an excessive load for the bearers; strong, so that during the journey no breakdown will occur; as small as possible, so that it can pass freely along the narrow passages and enter the small openings of the dugouts; finally (and this is a "sine qua non" for an effective litter), it should be adaptable to either hand, wheelbarrow, or automobile transport, and also be capable of being placed on the ground without modifying the position of the patient or imposing new sufferings on him. Of all models of litters in present use or that have been suggested, the authors consider that the regulation folding stretcher most nearly approaches these requirements, but does not meet the conditions entirely. The regulation litter was designed for

mobile warfare, for rescue in the open field, and is quite unadapted to the present form of trench warfare, in which the wounded are evacuated through narrow passages in which the bearers, in order to pass certain angles, are compelled to raise the stretcher at arm's length above the parquet, thus exposing the patient to the fire of the enemy; to subject it to variable inclinations which are extremely painful to the wounded man and tiring to the bearers; or, finally, to slightly reduce the width of the litter by bending the metal hinges separating the two shafts, thus causing discomfort. The authors have devised a litter intended to facilitate the transport of wounded through the trenches, in which the patient assumes a semireclining position somewhat resembling the Fowler position or that of a man in a sitz bath. This litter is short, can be allowed to rest on the ground without changing the position of the patient, and the shafts can be fixed at two different widths allowing the litter to be carried either on the shoulders or at arm's length. The best solution of the problem of transport of the wounded through communication trenches would be to have reserved for this purpose a special passage slightly widened and rounded at the angles, or, in cases of very sharp angles, diverticula could be made to facilitate the negotiation of these corners by the litter.

THE SALVAGE OF WOUNDED IN THE OPEN FIELD DURING ATTACKS.

This is a very complicated and perilous operation, presenting a series of difficulties, some depending on the fact that the wounded, the medical officers, and the stretcher bearers are exposed to the fire of the enemy, others upon the nature of the ground to be traversed and the distance to be covered, and at times upon the considerable number of wounded to be transported. The rescue of the wounded soldier is carried out under the menace of either artillery or rifle fire or both at once. Artillery fire rarely hinders rescue during the day; in fact, rescue is safer during the day than at night, as the bearers are able to keep better informed as to the zone bombarded by the enemy. In addition, irregularities of the ground can be taken advantage of, the entrance to the trench is more easily found, short cuts may be chosen, and swampy or torn-up ground or other obstacles may be avoided. Infantry fire, on the contrary, renders rescue during the day almost totally impossible in open territory at less than 1,200 to 1,500 meters from the enemy lines. Infantry fire is direct while artillery fire is indirect, shelling an unseen zone, with only a certain number of chances of hitting those passing through it. In view of these facts, as far as possible the rescue of wounded in regions exposed to rifle fire should take place during the night, and

that of wounded in regions exposed only to artillery fire in broad daylight. When large numbers of wounded are involved, each patient should not be transported separately to the often distant dressing station, but these men should be grouped as quickly as possible in a near-by shelter. After all the wounded are assembled and protected from a new injury and from exposure, they should be methodically conducted to the dressing station, which perhaps by this time will be relieved of the walking cases that arrived there earlier. This method of dividing the salvage into two distinct operations requires, if properly carried out, a much greater number of litters than ordinarily provided. It is of the utmost importance that disturbance of the severely wounded be reduced to a minimum; the patient, once placed on a stretcher, should be removed from it only to be placed on the operating table or in a hospital bed. Sufficient provision should be made in advance so that this type of procedure can be carried out.

FIRST CARE ON THE FIELD OF BATTLE.

In addition to picking up the wounded, the sanitary service of the first line has a therapeutic function to perform, limited almost exclusively, however, to arrest of hemorrhage. This must often be carried out by the apparently brutal constriction afforded by a belt, strap, shoe lace, or bandage, when the classical tourniquet is not available. The immediate application of this temporary hemostasis is many times absolutely necessary to save the life of the patient until he can be given proper care at the dressing station. Another less urgent therapeutic indication is "immobilization of fractures." All the classical treatises on war surgery describe improvised immobilization apparatus, but all are too complicated to be employed on the battle field. The authors believe that for this purpose the simplest immobilization for fractures of the upper limb consists in fixing it to the thorax with a few turns of a bandage. In fractures of the lower limb immobilization is accomplished by using its fellow of the opposite side as a splint. When the two lower limbs are fractured a temporary splint may be improvised with a rifle or stake placed between the two limbs and fixed to them. In addition to these essential indications it is advisable before transportation of the wounded man to apply a temporary dressing. While from a practical standpoint this may have no real therapeutic value, it has a moral effect as an indication of the interest taken in the suffering of the patient. Of more value is an injection of morphine, camphorated oil, or a swallow of tea, to lessen the pain, to stimulate the patient, and to decrease the waste of nerve force.

EXTRACTS FROM "THE PRACTICAL DRUGGIST."

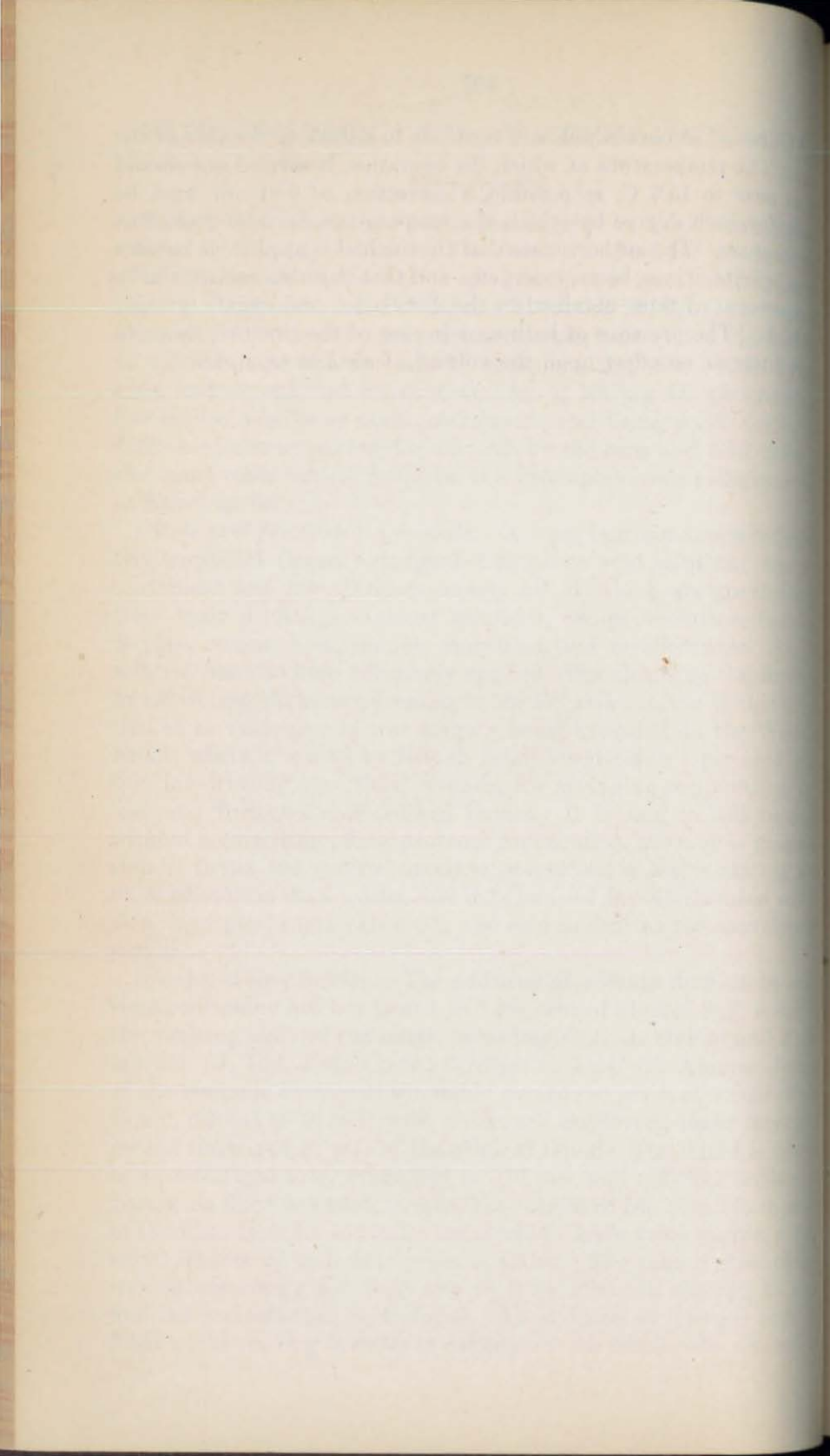
AUGUST, 1918.

Hexamethylenamine as a fuel.—Hexamethylene tetramine is recommended as a ready substitute for alcohol as fuel for producing a small, hot, sootless flame when a spirit lamp is not available (Merck's Report). It is said that two 5-grain tablets of the drug, such as are often carried in a physician's medicine case, will give a clean flame of sufficient heat to boil 5 mls of water in a test-tube within 30 seconds, and of sufficient duration to keep it boiling for two minutes. For boiling needles or small instruments, sterilizing water for hypodermic injections, testing for albumin by the heat and acid method, and many other similar purposes, this extemporaneous technique may be found useful.

Picric acid for dressing wounds.—A 1 per cent aqueous solution of trinitrophenol (usually designated as picric acid solution) forms a convenient test for alkaloids, nearly all of which are precipitated from their diluted acidulated solutions, except aconitine, caffeine, cocaine, conine, hyoscyamine, morphine, and theobromine. Such a solution has also been effectively applied after cleansing the surface by saturating cloths as a dressing to burned areas, its use in this direction as an antiseptic in war surgery being extended on the Western Front, where it is used by British Army surgeons in 1 per cent solution for dressing superficial wounds, for syringing suppurating sinuses and fractures and crushed tissues. It is said to kill bacteria without a corroding effect, prevents suppuration, stimulates granulation of tissue, has marked anodyne properties, is less irritating and more efficacious than iodine, and may be used for sterilization of the skin in surgical cases. Its use is also said to shorten the convalescent period.

Alcohol determination.—The addition of sodium fluoride to solutions containing not less than 1 to 2 per cent of alcohol, will result in the "salting out" of the latter, according to C. J. Haines and J. W. Marden (J. Ind. Eng. Chem., through C. U. C. P. Alumni Jour.). If the alcoholic content of the liquid exceeds 50 per cent 5 mls of the liquid, diluted to 10 mls with water, are employed; lesser strengths permit the use of 10 mls of the original liquid. The liquid is placed in a centrifugal tube, graduated in 0.01 mil, and sufficient sodium or potassium fluoride added, to cause the volume of the liquid to increase to 13 mls. In order to render the alcoholic layer more visible, a very small amount of malachite green is added. The tube is then closed, shaken vigorously for from two to three minutes, allowed to cool, and the contents then centrifuged. An addition of 0.15 mil must be made to the reading in order to compensate for incomplete separation

and traces of alcohol which will continue to adhere to the side of the tube. The temperature at which the operation is carried out should be as near to 15.6 C. as possible, a correction of 0.01 mil must be made for each degree by which the temperature deviates from this temperature. The authors state that the method is applicable to tinctures, spirits, wines, beers, cider, etc., and that it yields results within 0.40 per cent of those obtained by the distillation and specific-gravity methods. The presence of iodine, as in case of the tincture, seems to exert little or no effect upon the volume of alcohol separated.





FIRST AID SAVES LIFE.

OCTOBER 19, 1918.

From: Post Commander.

To: J. Linwood King, Hospital Apprentice (first class), United States Navy.

Via: Senior Medical Officer.

Subject: Commendation.

1. In a report upon the wounding of Private Dewey J. Daugherty, United States Marine Corps, on October 2, 1918, the senior medical officer states as follows:

From the conditions found upon arrival at the hospital, i. e., that the main artery of the arm had been severed, it is evident that some one rendered very prompt first aid. This action is very commendable, in view of the fact that had not Private Daugherty received immediate attention, he would have undoubtedly lost his life from loss of blood, and it is recommended that whoever rendered this first aid be commended for his prompt action.

2. Upon investigation, it has been reported that you rendered the first aid to Private Daugherty, and the post commander takes great pleasure in commending you very highly for your prompt and intelligent action. It must always be a source of great satisfaction to you to feel that your resourcefulness in this emergency resulted in saving the life of a fellow-man.

3. Copy of this letter will be placed with your record.

J. T. MYERS.

DISTINGUISHED CONDUCT IN ACTION.

MEMORANDUM.

SEPTEMBER 16, 1918.

From: Major General Commandant.

To: Bureau of Navigation.

Subject: Commendation for distinguished conduct in action.

1. The following paragraphs are copied, for your information, from a communication from the regimental commander, headquar-

ters, Sixth Regiment, M. C., A. E. F., 28 July, 1918, to the division commander:

Pharmacist's Mate (Third Class) Edmund P. Groh, United States Navy, in the action near Vierzy on July 19, having shown great courage in dressing wounded on the open field, continued in the performance of his duty after being wounded. He refused to be evacuated until he had completed the dressing of all wounded brought to him.

Hospital Apprentice (First Class) Leveque L. Whalen, United States Navy, in the action near Vierzy on July 19, worked through the day under terrific artillery and machine-gun fire in dressing the wounded and moving them to safety. Several times he performed this duty between the opposing lines where he was subjected to the fire from both sides.

Pharmacist's Mate Lee Usher, United States Navy, in the action near Vierzy on July 19, advanced with infantry through a heavy machine-gun fire, administering aid to the wounded as they fell. He took in wounded from the front line to Vierzy under heavy fire and brought back stretchers and water for the wounded. When prisoners were being brought in he fearlessly ran along a line exposed to snipers and machine-gun fire to direct the guards to wounded men in order that they might be properly evacuated.

Chief Pharmacist's Mate Horatio D. Gates, Hospital Apprentice (First Class) Oliver W. Pilkerton, and Hospital Apprentice Lester K. Layton, United States Navy, for cool and effective work in caring for men wounded in the action near Vierzy, on July 19. Exposed to heavy fire in the open, and without adequate shelter, these men performed valuable service in giving prompt and efficient aid that undoubtedly saved lives that otherwise would have been forfeited.

Hospital Apprentices John Marks and Leonard Barker, United States Navy, in the attack on Tigny on July 19, labored courageously and tirelessly throughout the day and well into the night in dressing the wounded on the field and superintending their evacuation. This work was carried on both in the open and under inadequate shelter.

Hospital Apprentice Clyde A. Kinkle, United States Navy, in the action near Vierzy on July 19 was conspicuous for his incessant work until he fainted from sheer exhaustion at the end of 10 hours' duty. This work he carried on in the open field and under heavy fire.

Pharmacist's Mate (Second Class) Bernard W. Herman, in action near Vierzy on July 19, showed conspicuous courage and coolness in giving first aid to the wounded in the open under heavy enemy fire.

GEORGE BARNETT.

OFFICE OF THE REGIMENTAL SURGEON, FIFTH MARINES,
July 23, 1918.

From: Regimental Surgeon.

To: Commanding Officer, Fifth Regiment United States Marines.

Subject: Recommendations for gallantry in action.

1. I have to recommend the following-named men for gallantry in action and displaying extraordinary heroism and devotion to duty on the night of July 18, 1918, while the attack was in progress on the town of Vierzy, France:

Chief Pharmacist's Mate Harry W. Jarvis, U. S. N.

Pharmacist's Mate, First Class, Forest T. Medkirk, U. S. N.

Pharmacist's Mate, Third Class, Lorraine F. Rodemich,
U. S. N.

Sergt. John A. White, U. S. M. C.

Of their own initiative, organized and established advanced aid posts, following closely upon the first waves of attacking troops, they evacuated the wounded troops rapidly and successfully under a most harassing fire.

The following-named officers were witnesses:

Capt. John Fay, U. S. M. C.

Lieut. Lieth, Sanitary Corps, N. A.

PAUL T. DESSEZ.

[First indorsement.]

HEADQUARTERS, FIFTH REGIMENT, MARINE CORPS,
AMERICAN EXPEDITIONARY FORCES,
July 23, 1918.

From: Commanding Officer.

To: Commanding General, Fourth Brigade, Marine Corps.

1. Forwarded approved and with recommendation that a suitable recognition be awarded to the above-named men.

LOGAN FELAND.

OFFICE OF THE REGIMENTAL SURGEON, FIFTH MARINES,
SECOND DIVISION, AMERICAN EXPEDITIONARY FORCES,
France, July 23, 1918.

From: Regimental Surgeon.

To: Commanding Officer, Fifth Regiment U. S. Marines.

Subject: Recommendation for gallantry in action.

1. I have to recommend the following-named man for gallantry in action and displaying extraordinary heroism and devotion to duty

on the night of July 18, 1918, while the attack was in progress on the town of Vierzy, France.

Chief Pharmacist's Mate Harry W. Jarvis, U. S. Navy.

Of his own initiative organized and established advanced aid post following closely upon the first waves of attacking troops, he evacuated the wounded troops rapidly and successfully under a most harassing fire.

P. T. DESSEZ,
Surgeon, U. S. Navy.

PROMOTIONS.

OCTOBER 29, 1918.

Bureau of Navigation Circular Letter No. 199-18.

To: All Ships and Stations.

Subject: Permanent Appointments—Correction to Bureau of Navigation Annual Circular.

Reference: Bureau of Navigation Annual Circular, dated 1 January, 1918, paragraph 55.

1. Make the following change in Bureau of Navigation Annual Circular, dated 1 January, 1918, paragraph 55, page 13, first line, strike out from the words "and may" to the end of the paragraph and substitute in lieu thereof:

In no case will a permanent appointment be given to any chief petty officer who has not served six months at sea in his rating, except that chief petty officers, class 5, of the Naval Reserve Force, who have served six months in their ratings at operating air stations may be given permanent appointments.

L. C. PALMER.

NEW EXAMINATION REPORT, HOSPITAL CORPS, UNITED STATES NAVY (N. M. S. H. C. 1).

1. The new issue of the examination report, Hospital Corps, United States Navy, has recently been issued to the Medical Supply Depot, Brooklyn, N. Y., and is now obtainable on requisition for blank forms O. It will be noted that the new form has printed on the reverse side, "Statement of Qualifications for Chief Pharmacist's Mate and Pharmacist's Mate First Class" (N. M. S. H. C. 5).

2. It is desired that the examination report be filled out as completely as possible by the medical officer under whom the candidate for advancement is serving. The report will then be forwarded to the examining board in duplicate.

3. Under "details" *dispensary* was inadvertently omitted from the form. If the candidate has had dispensary duty, this detail can be substituted for one of the less important details, such as anesthetics, X-ray, or it may be listed under "special duties." Upon completion of examination, the examining board should forward one copy of the report to the Bureau of Medicine and Surgery direct, with such other papers as are required by the Bureau of Navigation's annual circular, and one copy to the commanding officer who has custody of the candidate's service record.

4. The reverse side of the report (N. M. S. H. C. 5) is only required to be filled out in the case of candidates for the rate of pharmacist's mate first class or chief pharmacist's mate acting and permanent.

N. M. S. H. C. 1.

EXAMINATION REPORT, HOSPITAL CORPS, UNITED STATES NAVY

U. S.

Name Rate

(Surname first.)

Requests examination for rate of

Born at Date

Enlisted as Date

	Rated.	Date
Education: Common school years.	H. A. 2d cl.	
High school years.	H. A. 1st cl.	
College years.	Ph. M. 3d cl.	
Special education or training	Ph. M. 2d cl.	
.....	Ph. M. 1st cl.	
.....	Ch. Ph. Mate	
.....	Ch. Ph. Mate (per.)	

Graduate of Hospital Corps School at Months at school

Details.	Period. (Man's statement.)	I consider him to be—		Manner of performing duty.
		Qualified as assist- ant.	Qualified in charge.	
Ward or sick bay				
Clerical office				
Dressing room				
Operating room				
Laboratory				
X-ray				
Anesthetics				
Commissary				
Master-at-arms				
Instructor				
Special duties				

Conduct Candidate's outstanding qualities

Sobriety

Offenses since last promotion

Do you consider him qualified for promotion?

Surgeon, U. S. Navy (with whom candidate is serving)

REPORT OF EXAMINING BOARD.

1. Aptitude	8. Diets and messing for sick
2. General education	9. Clerical forms and procedure
3. Anatomy and physiology	10. Pharmacy and chemistry
4. Minor surgery and first aid	11. Sick bay and ward duties
5. Materia medica	12. Typewriting (words per minute)
6. Nursing	13. Practical (all subjects)
7. Hygiene and sanitation	GENERAL AVERAGE

We recommend the candidate for promotion.

(Do or do not.)

APPROVED: Rated

Date

Commanding.

Members of Board

To:

(One copy to Bureau M. & S.; 1 copy to commanding officer in custody of candidate's account)

Examine in H. A. 2d cl., Subjects 1 to 2, inclusive. Pharmacist's mates, 1st class, and chief pharmacist's mates to be examined in all subjects.

" " H. A. 1st cl., " 1 to 4, " " "

" " Ph. M. 3d cl., " 1 to 6, " " "

" " Ph. M. 2d cl., " 1 to 10, " (OVER.)

N. M. S. H. C. 5.
42022

STATEMENT OF QUALIFICATIONS FOR CHIEF PHARMICIST'S MATE AND PHARMICIST'S MATE, FIRST CLASS.

To be made out and forwarded by medical officer under whom the candidate is serving to examining board for further forwarding to Bureau of Medicine and Surgery, with examination papers.

Answer questions completely, but as briefly as is consistent.

To: BUREAU OF MEDICINE AND SURGERY:

Subject: Qualifications of _____
for the rating of _____

1. Is he attentive and studious? _____
2. Is he bright and active, and does he show good judgment? _____
3. Does he show a thorough knowledge and understanding of the duties of the Hospital Corps? _____
4. Does his work indicate that he has originality and initiative? _____
5. Is he orderly and neat in his work, surroundings, and person? _____
6. Is he military in bearing and dignified and painstaking in the performance of his duty? _____
7. Has he the ability to control men and to maintain discipline? _____
8. Does he bear or assume responsibility in a trustworthy manner? _____
9. Do you consider him a sufficiently satisfactory, competent, reliable man to hold the rating of _____ and one who is, in your opinion, unquestionably qualified for, and one who could be depended on in any assignment, independent or otherwise, in connection with the duties of his rating? _____
10. Would you willingly and with justifiable confidence accept him for duty under your direction as your _____?
11. State here what are the candidate's outstanding qualities or special qualifications; his defects or shortcomings: _____

12. Remarks: _____

Surgeon, U. S. Navy.

Since the last issue of the SUPPLEMENT the Bureau of Medicine and Surgery has been informed that the following-named men have been recommended for the rate of pharmacists' mates first class.

Anderson, C. S.
 Arnn, C. E.
 Arnold, G. E.
 Arrington, R. O.
 Atkinson, L. R.
 Babcock, J. B.
 Bailey, C. W.
 Baines, A. W.
 Balch, J. H.
 Bamber, W. R.
 Barclay, C. L.
 Barney, G. J.
 Baxter, L. E.
 Beecroft, E. L.
 Bennett, A. W.
 Bervick, J. J.
 Beyer, E. L.
 Black, W. R.
 Blake, C. G.
 Bosley, B. J.
 Bostick, E. L.
 Bower, E. J.
 Brakenwagen, F. W.
 Bronish, A. H.
 Bruns, P. W.
 Burdett, W. M.
 Burke, J. W.
 Butt, E. M.
 Cabaniss, G. C.
 Cahill, M. L.
 Campbell, G. R.
 Campbell, T. C.
 Canoles, J. A.
 Carroll, D. N.
 Cassady, Hugh.
 Clements, M. T.
 Cline, H. H.
 Clingenpell, E. A.
 Compton, L. C.
 Cook, C. S.
 Cottrill, J. L.
 Corr, F. A.
 Cowan, M. V.
 Cragen, G. E.
 Craver, J. E.
 Creeven, M. J.
 Cult, D. H.
 Cusick, W. F.
 Dale, W. E.

Daley, C. W.
 Davids, J. N.
 Davis, J. G.
 Davis, J. W.
 Dawson, C. N.
 Donovan, B. J.
 Dowdy, J. H.
 Ebershach, R. V.
 Eckerson, W. B.
 Ellis, C. R.
 Evans, H. R.
 Farner, C. J.
 Ferguson, J. N.
 Fleetwood, T. E.
 Flodeen, C. E.
 Ford, H. J.
 Fowdle, E.
 Frazier, M. G.
 Frederick, C. L.
 Fry, A. R.
 Gale, H. H.
 Gault, P. S.
 Gelder, L. B.
 Gentry, C.
 Ginsburg, S. A.
 Goldberg, E.
 Goodwin, O. S.
 Graham, F. A.
 Greene, A. D. L.
 Grisey, L. S.
 Gustafson, H. P.
 Hammond, L. R.
 Handley, J. E.
 Hanks, C. W.
 Hansen, R.
 Hanson, G. W.
 Hanyszanski, W. C.
 Harbourn, W. J. B.
 Harden, J. J.
 Harper, C. R.
 Harris, W. B.
 Harrison, E. D.
 Hartley, A. R.
 Harville, C. L.
 Hershey, J. I.
 Hiestead, C. H.
 Higgins, E. A.
 Higgins, N. L.
 Hilgesen, James.

Houvener, H. L.
 Howard, W. F.
 Hughes, R. B.
 Hutchins, C. K.
 Jarvis, C. H.
 Johnson, L. N.
 Johnson, O.
 Jones, H. S.
 Jorgensen, N. W.
 Kemp, W. La R.
 Kennedy, R. W.
 Kicherer, H. C.
 Klendl, R. A.
 Kinard, R.
 King, J. R.
 King, T. R.
 Knight, T. W.
 Kracke, R. R.
 Labauve, E. C.
 Lacey, R. G.
 Lindberg, E.
 Lindh, H. K.
 Lore, E. A.
 Lucas, E. F.
 McAlpine, W. T.
 McAuliffe, J. L.
 McClarrinon, G. E.
 McCormick, L. T.
 McCoy, H. C.
 Mastin, G. H.
 Mathews, J. J.
 Meals, R. W.
 Millen, W. A.
 Miller, E. L.
 Miller, N. C.
 Mills, H. R.
 Monahan, A. J.
 Moody, L. J., jr.
 Moore, I. D.
 Mulreany, K. F.
 Nelson, G. W.
 Neumaun, E. K.
 Newton, H. V.
 Nichols, E. R.
 Nixon, O. E.
 Nolan, C. F.
 Norris, N. A.
 Nuttall, H. W.
 Olson, J. G.
 Osborne, G. K., jr.
 Paden, A. G.
 Parker, F. B.
 Passalacqua, A. A.

Peluse, S.
 Perkins, F. A.
 Perry, L. L.
 Perry, R. A.
 Peterson, C. L.
 Pfliastirer, R. M.
 Ploughe, R. R.
 Pope, W. B.
 Prather, A. G.
 Radcliffe, H. L.
 Reichgert, A. F.
 Ripley, E.
 Risk, P. H.
 Rogers, J. W.
 Ruch, Fred.
 Rudolph, R. W.
 Rutherford, W. F.
 Sahlberg, C. J.
 Sears, F. E.
 Schomaker, I. F.
 Shephard, H. M.
 Shepherd, R. C.
 Shore, J. G. B.
 Shoup, R. E.
 Sibley, L. C.
 Slade, J.
 Slyter, R. I.
 Snyder, H. M.
 Soule, C. L.
 Speer, G.
 Stack, E. D.
 Stanley, E. W.
 Stephenson, W. McK.
 Stillwell, A. R.
 Storm, F. S.
 Stover, J. R.
 Stratford, P. C.
 Sullivan, F. L.
 Tatman, L. D.
 Terwilliger, I. W., jr.
 Thomas, E. G.
 Thornburgh, J. E.
 Todd, W. McC.
 Townsend, R. E.
 Travis, Lester.
 Treat, D. V.
 Tripplett, L. C.
 Turner, M. K.
 Tyler, F. A.
 Underwood, E. C.
 Upson, R.
 Utterbach, C. W.
 Van Horn, G. C.

Vineyard, W. D.
Walker, C. C.
Warner, G. B.
Warner, R. O.
Watson, E. A.
Watt, E. W.
Whaley, J. H.
Whitehurst, R.

Whitt, F. E.
Wilcox, L. V.
Williams, P.
Winitzky, J. A.
Woodmansee, W. F.
Woods, A. E.
Zimmerman, T. J.

Since the last issue of the SUPPLEMENT the Bureau of Medicine and Surgery has been informed that the following-named have been recommended for the rate of chief pharmacist's mate:

Adams, John H.
Aguon, Juan G.
Auger, Geo. L. M.
Baird, M. K.
Ball, F. O.
Ballou, L. H.
Barrett, O. C.
Beauregard, J. G. A.
Beavers, T. N.
Beebe, L. L. E.
Benjamin, E. L.
Best, J. G.
Black, W. R.
Blake, J. H.
Bowen, E. J.
Buchanan, G. A.
Burdette, S. F.
Burdett, W. M.
Caiger, A. E.
Campbell, Neal.
Capito, J. A.
Chaney, O. E.
Chapman, G. McK.
Cheetham, R. N.
Clark, T. H.
Cohrs, H. J.
Cooper, H. E.
Couch, C. L.
Crawford, W. E.
Creble, S. B.
Dickason, E. W.
Dorenbon, John.
DuFrane, E. W.
Edelen, J. R.
Finch, L. W.
Ford, John.
Fritz, P. S.
Funkhouser, A. G.
Gardiner, C. R.

Granger, E. E.
Grove, H. A.
Horning, B.
Howell, R. A.
Hughes, C. B.
Irvin, Walter.
Jones, A. W.
Kastner, O. F.
Kernan, P. E.
Kohler, F. C.
Larsh, L. A.
Lusk, R. A.
McCormick, D. C.
McGillis, J. R.
MacIninch, C. B.
Masterson, D. P.
Medkirk, F. T.
Mentzel, E. H.
Mellville, A. F.
Miller, F. O.
Mobley, K. P.
Moore, C. B.
Moore, E. S.
Moore, J. S.
Nelson, E. A.
Niccoll, J. I.
Palmer, W. E.
Parkes, K. B.
Peters, H. A.
Phelps, T. L.
Phillips, M. L.
Pickering, J. L.
Poe, F. C.
Powell, D.
Powers, J. H.
Pryor, J. H.
Quick, F. C.
Rayner, W. H.
Riegel, G. L.

Robinson, G. P.
 Sayre, E. L.
 Simmers, G. R.
 Staads, J. A.
 Stewart, J. P.
 Stine, W. A.
 Sullivan, R. E.
 Swanson, R. C.
 Trojakowski, W.
 Van Gaasbeek, Wm. H.

Vick, L. J.
 Vickery, W. K.
 Wall, J. P.
 Weikel, L. H.
 Weiss, P. F.
 Wheeler, H. M.
 Williams, W. L.
 Williamson, M. K.
 Wright, B. F.

THE NAVAL PHARMACIST.

JOURNAL OF THE SIXTY-SIXTH ANNUAL MEETING OF
 THE AMERICAN PHARMACEUTICAL ASSOCIATION,
 CHICAGO, ILL., AUGUST 13-17, 1918.

ABSTRACT OF THE MINUTES OF THE FIRST GENERAL SESSION.

The first general session of the sixty-sixth annual meeting of the American Pharmaceutical Association was called to order in the gold room of the Congress Hotel, Chicago, Tuesday evening, August 13, 1918, at 8 p. m., by President A. R. L. Dohme.

After introductory and congratulatory remarks President Dohme called on ex-President John Uri Lloyd, of Cincinnati, for the invocation. In his appeal Prof. Lloyd referred to those with whom he had been associated in the past, whose duties had been assumed by those present, and expressed the hope for a successful convention which implied a helpfulness for the world.

President Dohme then invited representatives of the Government to deliver their messages and extended them a welcome. Lieut. Lawrence Zembsch spoke for the Navy Department. (Lieut Zembsch is one of 82 pharmacists of commissioned rank in the Navy. His rank is that of lieutenant, junior grade, in the Medical Department, and he is stationed at Great Lakes Naval Training Station.)

The speaker extended an invitation to the members to visit the training station, where 50,000 of America's finest youths are preparing for their duties. He then explained the position of pharmacists in the service and contended that educated pharmacists had advantages they would not have without such education. He stated that before the war there were 23 pharmacists and a chief pharmacist in the Navy. To-day there are 271 actively listed; 82 of these, after having passed a severe competitive examination as to their pharmaceutical knowledge, and their ability as first-aid men, as sanitary inspectors, X-ray technicians, laboratory workers etc., have been given commissions. They have been commissioned for the

period of the war as temporary officers of the United States Navy with the rank of lieutenant, junior grade, and lieutenant in line for promotion to that of lieutenant commander, which is equal to that of major in the Army. (Extract from the September, 1918, "Journal of the American Pharmaceutical Association.")

ADDRESS

By LAWRENCE ZEMBSCH, Lieutenant (T), United States Navy,¹

Delivered at the annual convention of the American Pharmaceutical Association held August 12 to 17 at the Congress Hotel, Chicago, Ill.

LADIES AND GENTLEMEN: It gives me great pleasure to be the Navy's representative at this convention, and in the same sentence while speaking of the Navy, I might mention that right here on the Great Lakes is situated the largest naval training station in the world. During the last year about 75,000 trained men have been sent from this station to sea. If you should care to pay us a visit each Wednesday afternoon, beginning at 1 o'clock there is held a grand review open to the public. While there you will find some 50,000 of America's finest youths in training for the battleships, superdreadnaughts, cruisers, and troopships, and also for the torpedo boats which are to-day safely convoying across the Atlantic, in spite of the Kaiser's submarine menace, about 300,000 troops a month to Gen. Pershing.

The registered and graduate pharmacists of the United States have been confronted with the same problem that has been placed squarely before all American citizens by our entrance in the war. There were few men whose home ties were so easily broken that they could afford to leave their civil occupations and enlist. The selective service law, popularly called the draft, crystallized the opinion of the people of the United States and expressed the conviction that no matter how great the individual sacrifice, when the country called every young man owed his services to his country in either the Army, the Navy, or in an occupation necessary to the successful and victorious ending of the conflict now being waged.

In the Navy the titles given the enlisted branch whose duty it is to assist the naval surgeon in the care of the sick or wounded contain the word "pharmacist," the four upper ratings of the Hospital Corps being designated pharmacist's mates, either third, second, first, or chief. This title containing the word pharmacist is used because for many centuries one of the doctor's most valued assistants has been the pharmacist and because every member of the Hospital

¹ Since this address was delivered the Secretary of the Navy has by general order given the military title to all officers of the staff, inclusive of this special group of Medical Department personnel.

Corps of the Navy must have a knowledge of some of the simpler pharmaceutical proceedings and a knowledge of the administration of the drugs most frequently used in the treatment of the sick or injured men. The use of the word pharmacist for the majority of these men has created the impression that the Navy needs thousands of pharmacists in the civilian sense of that word. The impression is not quite a true one. The Navy has need for, and has enlisted, many young men to be trained as assistants in the care of the sick and wounded, but the amount of pharmaceutical knowledge needed by the majority of these young men is not very great or very extensive. A thorough knowledge of pharmacy is not needed to teach a young man to transport the wounded, to prepare a room or a patient for a surgical operation, to keep the clerical records of the medical department, to care for a bed patient, a tubercular or insane patient, or one suffering from a contagious disease, or to act as a naval surgeon's assistant afloat.

The Navy is glad to welcome in its Hospital Corps the young registered and graduate pharmacist who desires to begin training that will teach him to be an efficient first-aid man, a careful clerical man, a good nurse, an X-ray technician, a laboratory worker, or a surgeon's assistant. While the greater part of the duties of the hospital corpsmen are not pharmaceutical, these men are not allowed to qualify for the upper ratings in that corps until they have gained, in addition to their other abilities, a knowledge of dosage and toxicology, and until they have a definite knowledge of pharmaceutical procedure.

It must not be understood that the Navy does not want the graduate pharmacist in the Hospital Corps. The fact is, that upon first enlistment in the Hospital Corps the Navy offers the graduate pharmacist a rating one step higher than is offered the lawyer, the business man, or other citizen who comes for first enlistment. A knowledge of pharmacy before enlistment in the Hospital Corps is a definite and completed step for advancement, but pharmaceutical knowledge alone, however, is but one step among many that must be taken before the registered or graduate pharmacist of civil life can qualify for the warrant rank of pharmacist in the naval sense of that term.

As the naval surgeon must be an all-round man rather than a specialist, so it is with the naval pharmacist, and therefore among the naval pharmacists we find not only the best of pharmaceutical ability but men who, in addition to this, are experienced in the handling of commissary and clerical duties, who are qualified as first-aid men, sanitary inspectors, as laboratory workers, all to meet the Navy needs.

Before the war the Navy had 23 pharmacists and chief pharmacists. To-day it has 271, both warrant and commissioned. Of these,

82 have passed a severe, searching competitive examination, in which their pharmaceutical knowledge, their ability as first-aid men, as medical supply and commissary officers, as assistants to the naval surgeon have been given the severest kind of test. For the period of the war these have been given temporary commissions as assistant surgeons with the rank of lieutenant (j. g.) and lieutenant, in line for promotion to the rank of lieutenant commander, equal to that of major in the Army. For years a commission as assistant surgeon in the Navy has been given by the President and the Senate only to graduates of medical schools, just as for years the title ensign was given to graduates of the Naval Academy.

The naval pharmacist can hardly hope to attain the level of professional ability of the leaders in the pharmaceutical world. They can not stand before the pharmacists of the country and call themselves leaders in the pharmacist profession. They can and do, however, keep in touch with modern up-to-date pharmaceutical procedures and apply in the restricted pharmaceutical field of the Navy the best developments of the civilian leaders.

In January, 1917, there were 23 chief pharmacists and pharmacists in the Navy. These officers' names now appear at the head of the following list of lieutenants (temporary), to which grade they, with others who attained the permanent warrant grade since the beginning of the war, have been temporarily commissioned.

It is probable that by the time this is published opportunity will be given to qualify for the permanent grade of pharmacist.

LIEUTENANT (T) U. S. N.

Charles Edward Reynolds.
Alrik Hammar.
Stephen William Douglass.
James Albert Winterbottom.
John Haupt.
Charles Edward Reinhardt.
Robert Emmett Weaver.
Charles Schaffer.
Thomas Anthony Stareck.
Paul V. Tuttle.
Carl Arthur Setterstrom.
James Holden.
Fred Addison Payne.
Thomas Everett Kent.
Henry Lloyd Gall.
Allen Franklin Bigelow.
Tobias Butler Weaver.

Paul Frederick Dickens.
Henry Carsten Kellers.
Albert Henry Benhard.
Charles Frederick Wood.
Edward George Dickinson.
Roy Aikman.
Jason Hugh Barton.
Edwin Garner Swann.
William Thomas Gildberg.
Thomas Joseph Murphy.
John Henry Schreiter.
Lawrence Zembsch.
Joseph Aloysius Ortolan.
Abraham Theodore Schwartz.
Joseph Claude Gill.
Alexander John Link.
De Witt Clinton Allen.

Samuel Jacob Seckelman.
 Fred Henry Stewart.
 Ervin Chapman Eastman.
 Walter Wade Wade.
 William Mayze Benton.
 Henry Bernard Schreurs.
 Loring Nottingham.
 Harold Bartram Sanford.
 Corliss Page Dean.
 Nord Fowler Smith.
 Clyde Elwood Snider.
 Glen Dale Sipe.
 Benjamin White Claggett.
 Edgar Langdon Sleeth.
 Jeremiah Harris.
 Rodney Jesse Youngkin.
 Walter Hixon MacWilliams.
 Roscoe Conkling Rowe.

Willie Rufus Joiner.
 George Lawrence Grain.
 Paul Hapke.
 Leon Herman French.
 Lloyd Clifford Sims.
 Edward Roy McColl.
 Newton Winford Parke.
 Harry Garfield Danilson.
 Charles Plulo Hines.
 Edward Guy Dennis.
 Stanley Joseph Kinkaid.
 William Tell Minnick.
 Robin Ruff Hinnant.
 John Gustav Baisch.
 Herman Clyde Roe.
 Charles Peek.
 Boyce Lee Brannon.

PHARMACIST (T), U. S. N.

William F. Bly.
 Victor Hayleigh Chase.
 Richard Matthew Dunphy.
 Hiram Wilson Elliott.
 James Alexander Freeman.
 Datus M. Hervey.
 Thomas Leon Hildreth.
 Matthew Kempkes.
 John Haskins Kennedy.
 Henry Paine Knowles.
 John J. Lergenmiller.
 Glenn Forrest Lyon.
 H. E. Randolph.
 Edward Alonzo Rozea.
 Harold Leo Ryan.
 William Franklin Sheridan.
 Charlie Rupert Steen.
 Charles A. Adelmann.
 Robert D. Anderson.
 Lester E. Auger.
 Harold S. Austin.
 Jesse R. Ayers.
 Marion A. Banker.
 William E. G. Bartle.
 John E. Baum.
 William J. Bisel.
 Joseph F. Black.
 Lester E. Bote.
 William S. Burr.
 Norman Case.
 Harold B. Chatfield.
 Frederick L. Cogswell.

Warren V. Collier.
 John P. Cooney.
 William F. Crell.
 Charles H. Dean.
 Clarence H. Deane.
 Jack K. Diamond.
 Marion Lee Dickinson.
 Clement Duchesney.
 James F. Durkin.
 Alfred L. Eldridge.
 Joseph C. Fagan.
 Roy A. Fetterly.
 Oscar D. Fornwalt.
 James E. Fritch.
 George N. Golding.
 Charles R. Gorton.
 Henry L. Greenough.
 Donald R. Haguewood.
 Thomas C. Hart.
 Emil E. Heun.
 Allen J. Heuschling.
 Harry E. Hewes.
 William T. Hickelton.
 Harvey H. Hogue.
 Chauncey R. Holmes.
 John K. Holmes.
 Joseph O. E. Hummel.
 William H. Huston.
 Benjamin E. Irwin.
 Willard A. Jackson.
 Briggs C. Jones.
 Robert H. Joslyn.

Chester O. Kimball.
 Roscoe W. King.
 James A. Kirkpatrick.
 Charles E. Kreml.
 William W. Lamb.
 William W. Landrum.
 Arthur J. Larson.
 Walter C. Magoon.
 John F. Mahneke.
 Robert Martin.
 Leroy M. McCallum.
 Thomas F. Meagher.
 Frank D. Mears.
 Julius H. Meyer.
 Albert B. Montgomery.
 Troy A. Morrow.
 Frank A. Northrup.
 Frank E. O'Reilly.
 Clarence J. Owen.
 Wilbert D. R. Proffitt.
 Harry J. Ransom.
 Foster B. Redman.
 Lindsey W. Rider.
 William J. Riney.
 Leland Rowe.
 Hjalmar Rydeen.
 Norman L. Saunders.
 Kenneth M. Smith.
 Robert H. Stanley.
 Arthur V. Steinkraus.
 Charles C. Thome.
 Clarence A. Thompson.
 George S. Throp.
 Hawthorne Tolderlund.
 Ertel E. Weaver.
 Thomas Welch.
 Charles F. Whitmore.
 Theodore B. Wiggins.
 Guy O. Wildasin.
 Ernest William Herrmann.
 Charles David Morillon.
 Armin Miles Rode.
 William Lloyd Stewart.
 Franklin Gammal Wetherell.
 C. Beasley.
 F. R. Bork, jr.
 S. J. Bristow.
 R. J. Casey.
 J. H. Fischer.
 F. X. Francis.
 H. L. Frey.
 G. C. Gilpin.
 L. E. Hough.

M. D. Leach.
 J. Levansaeler.
 J. A. Libbon.
 J. B. Moylan.
 J. H. Reed.
 S. H. Reser.
 S. H. La Salle.
 B. F. Lindsley.
 R. O. Zimmerman.
 C. F. Van Epps.
 I. M. Gorusch.
 S. S. Gant.
 H. F. Harris.
 C. H. Spearman.
 O. F. Brooks.
 A. L. Crowder.
 A. R. Leh.
 W. W. McKee.
 E. E. Pennington.
 H. L. Rogers.
 W. C. Van Norden.
 G. R. Hansen.
 R. C. Payler.
 H. E. Haenke.
 C. R. Worden.
 M. E. Zimmerman.
 J. H. Wentworth.
 H. H. Colby.
 F. H. Burch.
 J. J. Farrell.
 W. A. Zur-Linden.
 F. O. Duncan.
 H. J. Megin.
 F. L. Bevier.
 B. W. Mandigo.
 J. M. Feder.
 F. H. Ogle.
 C. C. Petrey.
 L. W. Russell.
 N. H. McLean.
 C. J. Powers.
 E. C. Ware.
 M. Birtwhistle.
 W. H. Moon.
 C. C. Alexander.
 L. Martinelli.
 D. J. O'Brien.
 C. H. Mundy.
 R. Watson.
 G. E. Godfey.
 T. Veselick.
 J. A. McCormack.
 F. E. Simmons.

L. R. Mason.
E. W. Brooks.
R. E. Reed.
G. T. Davis.
Frank Shea.
W. Hostetter.
V. H. Coulter.
S. F. Strong.
N. Littlefield.
L. F. Wolcott.

C. Miller.
E. W. Hawkins.
T. J. Bones.
W. E. Quenstedt.
Berwyn Chaplain.
Clyde Eastman Crane.
Carson Andrew Nelson.
Asel M. Stanley.
Guy Davisson Taber.

PHARMACISTS' FLEET NAVAL RESERVE.

John Thomas Cassady.
Samuel B. Dodson.

Wilfred G. Gilliam.
Edwin Longshore Willhite.

PHARMACISTS U. S. N. R. F.

H. H. Williamson.
E. E. Eckerson.
M. Hamilton.
A. E. Pike.

Carl Isaac Campbell.
David Charles Moore.
Le Roy William Kurtzman.
Jabez King Hollowell.

CORRESPONDENCE COURSE FOR NAVAL PHARMACISTS.

PAPER NO. 7.

Mail answers not more than 1 month after receipt of this paper.

PROBLEM.

Outline the filing system you would adopt in the organization of the clerical department of a new naval hospital with a capacity of 1,000 patients.

ANSWER TO NO. 7.

1. All hospital corpsmen doing clerical work are agreed as to the advantages of adopting a uniform flexible filing system for all our naval hospitals. A system is presented herewith, some of the advantages of which are as follows:

(a) It can be standardized and made uniform, or nearly so, for all naval hospitals and can also be adapted to other stations and to ships.

(b) It is flexible and can be expanded or modified to meet local requirements.

(c) Letters are always accessible and not easily misplaced or lost.

(d) Letters are not briefed for filing. The system is self-indexing and automatic.

(e) Material and personnel files are separated, and the work of the two departments can be conducted in separate offices.

(f) Long experience with the file is not necessary to get results. An inexperienced man, by carefully following the permanent index, can locate or file correspondence readily.

2. Care must be used in filing correspondence as in any system. Cross indexing or filing is often necessary where a letter relates to more than one subject. This is accomplished by making additional copies of the letter, one copy for each subject represented and filing a copy under each subject, or by filing one copy of the letter under the most important subject and placing a brief or reference under each of the other subjects referred to stating the location of the correspondence.

3. The filing of all correspondence relating to individuals in separate jackets has been advocated, and the bureau has authorized the issue by medical supply depots of jackets for the purpose. The jacket system is fairly satisfactory for use in larger hospitals, if it is used for strictly personal correspondence only. The jacket system can be incorporated with the automatic system here outlined with excellent results, and the combined systems are illustrated in the outline.

4. The following equipment should be on hand to begin the system. Most of the material is kept in stock by supply officers and is obtainable on stub requisition.

(a) A supply of plain cardboard folders, letter size. "Acco" folders or similar types answer the purpose.

(b) Several boxes of brass paper fasteners, round head No. 6, or a sufficient number of "Acco" fasteners are still better.

(c) An official paper perforator.

(d) A set of rubber alphabet and number stamps are useful in stamping up your folders.

(e) A sufficient number of jackets, if the jacket system is to be used.

Prepare a number of copies of the permanent index, one copy for each person using the files and one to be posted on the wall. Additional subject and subhead numbers can be added from time to time to meet local requirements.

The file is divided into two grand divisions in which the key letter P represents all correspondence pertaining to Personnel and the key letter M all correspondence pertaining to Material. If the jacket system is used give all correspondence to be filed in jackets the key letter J.

Letter a sufficient number of folders for each subhead number shown on the index. After the key letter print the subject number followed by the subhead number. The folders should be lettered and numbered on the upper margin so as to be visible when in the drawer. Separate the subjects by means of heavy cardboard divi-

sion boards. It is a good plan to have these division boards ruled and printed, with all the subheads that follow. Perforate your folders to correspond with the perforations in official paper, only one side of the folder to be perforated. Thrust the paper fasteners through the folders and file the correspondence falling under each particular subhead in its proper folder in chronological order, the latest letter being always on top. Filing may be done as often as desired. Never remove correspondence from the folder for reference; use the folder as a bound book.

5. To locate or file correspondence:

You wish to write a letter relating to the promotion of a hospital corpsman. Consult your index, Personnel Section, and you find the subject number for Hospital Corps is 2, and the subhead number pertaining to the promotion of corpsmen, is also 2. Therefore the file number to be placed on the correspondence is P-22. (P for Personnel, 2 for Hospital Corps, and 2 Promotion.)

Again, suppose you receive a circular letter from the Bureau of Medicine and Surgery pertaining to the promotion of hospital corpsmen. Here you have a double subject (a) Circular letter, Bureau of Medicine and Surgery; and (b) Promotion, Hospital Corps. You can readily see that it is very important that all circular letters be kept in numerical order on a special file; therefore the letter should be placed under the file number P-71 (circular letters, Bu. M. & S.) but a copy of this letter should also be made and placed under the file number P-22 (Promotion Hospital Corps). For letters which are not important and which go under more than one subject it is not necessary to copy the whole letter but simply brief it, filing the brief under the additional subject.

Now, for example, under the "Material File." You wish to write, or you receive a letter regarding the construction of an addition to the commanding officer's quarters. Your M index gives you the subject number 3 (quarters) and the subhead 1 (commanding officer's quarters). Your file number is then M-31.

Thus, at the end of a year you have in your files a series of booklets, each booklet containing all the correspondence under a given subject for the entire year. The cardboard folders act effectively as binders and may be lettered on the front in the same manner as a book is titled.

It is not necessary that bureau forms, such as F, K, M, requisitions, vouchers, etc., be filed with the general correspondence. This also applies to form letters, etc. Most hospitals have special files for forms which are perfectly satisfactory. Neither is it desirable that correspondence pertaining to a requisition be filed with the general correspondence. It is customary and best to file such correspond-

ence with the requisition. Key letters and numbers have been assigned requisitions, etc., in the index for use in filing forms if desired.

Personnel Section. Key Letter "P."

SUBJECT.	SUBHEAD.
1. Medical officers. Duty...	1. Appointment. Reporting for duty. 2. Promotion. Examinations. Fitness reports, etc. 3. Orders. Detachment, etc. 4. Conduct. Adverse reports. 5. Health records. Physical tests, 6. Leave. 7. Discharges. Deaths. Retirements. 8. Duties. Details. Instruction. 9. Pay. Finances. Effects. Mail, etc. 0. Miscellaneous. A. Inquiries from outside sources. B. Special commanding officer's file. C.
2. Hospital Corps. Duty...	1. Enlistments. Reporting for duty. 2. Promotion. Examinations. Efficiency. Special qualifications. 3. Transfers. Orders. 4. Conduct. Courts-martial. Punishments. 5. Health Records. Physical condition. 6. Leave. 7. Discharges. Death. Surveys. 8. Duties. Details. Instruction. 9. Pay. Finances. Pay Accounts. Allotments. Insurance. Mail, etc. 0. Miscellaneous. A. Inquiries from outside sources. B. Organization. Vacancies. Complement.
3. Nurse Corps. Duty. (This file should be in custody of chief nurse. See bureau circular letter 115738, Dec. 8, 1917.)	1. Appointment. Reporting. 2. Promotion. Examination. Efficiency. 3. Transfers. Orders. 4. Conduct. 5. Health records. Physical examinations. Physical condition, etc. 6. Leave. 7. Discharges. Death. Surveys. 8. Duties. Details. Instruction. 9. Pay. Finances. Accounts. Mail, etc. 0. Miscellaneous. A. Inquiries from outside sources. B. Organization. Vacancies. Complements.
4. Patients, enlisted, Navy and Marine.	1. Admission. 2. Transfer from hospital. 3. Discharge from service. Surveys. 4. Conduct. Punishment. Courts. 5. Health records. Physical condition. 6. Leave. 7. Death. Burial. Shipment of remains. 8. Inquiries from outside sources. 9. Pay. Finances. Effects. Mail. Allotment. Insurance. Pay accounts. 0. Miscellaneous. A. Misconduct reports. B. Subsistence. C.

Personnel Section. Key Letter "P"—Continued.

SUBJECT.	SUBHEAD.
5. Patients, officers, Navy, Marine and Navy nurses.	1. Admission. 2. Transfer from hospital. 3. Discharge from service. Surveys. 4. Conduct. Punishment. Courts. 5. Health records. Physical condition. (These are confidential in case of nurses.) 6. Leave. 7. Death. Burial. Shipment of remains. 8. Inquiries from outside sources. 9. Pay. Finances. Effects. Allotments. Insurance. Pay accounts, etc. 0. Miscellaneous. A. Misconduct reports. B. Subsistence.
6. Patients supernumerary...	1. Admission. 2. Transfer from hospital. 3. Discharge from service. Surveys. 4. Conduct. Punishment. 5. Health records. Physical condition. 6. Leave. 7. Death. Burial. Shipment of remains. 8. Inquiries from outside sources. 9. Pay. Finances. Effects, etc. 0. Miscellaneous. A. B. Subsistence.
7. Reports and returns, Forms. Civil authorities.	1. Bureau of M. & S. circular letters. 2. Bureau of Nav. circular letters. 3. Commandant's orders. 4. Commanding officer's orders. 5. Miscellaneous orders. 6. Reports and returns, M. & S. 7. Reports and returns, Nav. 8. Reports and returns, civil authorities. Vital statistics, quarantine, etc. 9. Sanitary reports. 0. Miscellaneous. A. Public health officer's reports. B.

Jacket File. Key Letter "J."

FOR INDIVIDUAL JACKETS.

Use the key letter J followed by the initial of the individual's surname. Example: Correspondence to be filed in Smith's jacket would bear the file number J-S.

If copies of the correspondence are also to be placed in the general file, add the general file key letter and number. Thus if you saw a letter keyed as follows: P-22 J-S you would at once know that the original letter would be found in the personnel file under P-22 and also that a copy is in the jacket file under the letter S.

Of course if the jacket system is used a great many of the subjects and subheads will be used much less. New subjects and subheads can be added from time to time as the need becomes apparent, but do not add an indiscriminate number of subjects until the need becomes apparent.

Material file. Key letter "M."

SUBJECT.	SUBHEAD.
1. Reservation.....	1. Lands and grounds. Acreage.
	2. Walks. Fences. Roads.
	3. Trees. Vegetation. Seeds.
	4. Sewerage system.
	5. Crematory.
	6. Water supply.
	7. Tennis courts and playgrounds.
	8.
	9.
	0. Miscellaneous.
2. Buildings and construction. Repairs.	1. Main building, and repairs to.
	2. Adjoining wards.
	3. Mess halls.
	4. Power house.
	5. Laundry.
	6.
	7. (Use subhead for each additional structure of importance.)
	8.
	9.
	0.
3. Quarters, and fittings for.	1. Commanding officers.
	2. Executive officers.
	3. Junior medical officers.
	4. Pharmacists.
	5. Nurses.
	6. Hospital Corps.
	7. Civil employees.
	8.
	9.
	0.
4. Cemetery and care of dead.	1. Cemetery. Plans and plots.
	2. Headstones.
	3. Digging graves.
	4. Caskets.
	5. Disinterment.
	6. Embalming and contracts with undertakers.
	7. Transportation. Ferriage and tolls for dead.
	8.
	9.
	0.
5. Hospital departments and equipment.	1. Furniture and furnishings.
	2. Dispensary. Equipment and medicines.
	3. Laboratory and equipment.
	4. Operating room and equipment.
	5. Hydrotherapy and equipment.
	6. Library and equipment.
	7. Offices and equipment. Blank forms. Printing and all supplies.
	8. Laundry and equipment. Washing. Linen.
	9. X-ray and equipment.
	0.
	A.
	B.

Material File. Key Letter "M"—Continued.

SUBJECT.

SUBHEAD.

- | | |
|--|--|
| 6. Ambulance and delivery service. Live stock. | 1. Motor vehicles.
2. Repairs.
3. Gasoline. Oil.
4. Other vehicles.
5. Horses and other live stock.
6. Hay. Grain. Provender. Harness. Veterinary
7. Freight and ferriage. Tolls.
8.
9.
0.
A. |
| 7. Power plant and utilities. | 1. Machinery and equipment. Power house
2. Electric current.
3. Tools, all classes.
4. Telephones.
5. Fire protection apparatus.
6. Communications system.
7. Refrigerating system.
8.
9.
0. |
| 8. Commissary..... | 1. Equipment.
2. Ice and fuel.
3. Provisions, G. S. K.
4. Provisions, open purchase.
5. Deliveries. Shipments. Dealers' bills.
6. Rejections. Unsatisfactory service.
7.
8.
9.
0. Miscellaneous. |
| 9. Civil hospitals under contract. | 1. Use a sub number for each civil hospital under contract and file all business correspondence pertaining to that hospital under the appropriate sub-number. |
| 10. Requisitions and returns. | 1. Current open purchase requisitions.
2. Blanket requisition (open purchase).
3. Medicine and Surgery requisitions, B&4.
4. Stub requisitions.
5. Job orders.
6. Dealers' bills.
7. Vouchers.
8. Bills of lading. Shipments.
9. Property surveys, Form Ca.
0. Property inventories, Form "D."
A.
B.
C. |

Note.—Add new subjects when the need becomes apparent. Subhead numbers can be added and subhead numbers left blank on this outline may be filled in when necessary.

The above outline is based upon a system first devised by Medical Director M. F. Gates, United States Navy.

PAPER NO. 8.

Mail answers not more than one month after receipt of this paper.

PROBLEM.

Draw a chart or charts which can be used in a naval hospital as a guide for an inexperienced clerical force, in regard to the following:

- (a) All routine reports and returns from naval hospitals.
- (b) Clerical procedure upon discharge of an enlisted man from naval service.
- (c) Death of *any* person attached to hospital.
- (d) Transfer of patients from hospital, to duty, or otherwise.
- (e) Admission of patients or reporting of personnel for duty.

ANSWER TO NO. 8.

Charts A, B, C, D, E, and F.

CHART. N^o. A

ROUTINE RETURNS.

NAVAL HOSPITALS.

CHART NO. A.

(10) PERMISSIVE DISCHARGE MEMO
 (9) LOST PROPERTY LIST
 (8) RE-ENTRY VOUCHER
 (7) FEE-GIVING MEMO
 (6) CHECKRAGE
 (5) LIST MARINES COURT-MARTIAL
 (4) ANNUAL MARINES RECOMMENDATION
 (3) PAY ROLL CIVILIANS
 (2) FORM 25
 (1) FORM 25
 (10) PAY ROLL CIVILIANS
 (9) PAY ROLL CIVILIANS
 (8) PAY ROLL CIVILIANS
 (7) PAY ROLL CIVILIANS
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 (4) PAY ROLL CIVILIANS
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 (3) PAY ROLL CIVILIANS
 (2) PAY ROLL CIVILIANS
 (1) PAY ROLL CIVILIANS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
DAILY	x	x																									
WEEKLY			x																								
8TH								x																			
15TH				x				x	x																		
23RD								x																			
28TH (25TH FEB)					x																						
JAN. 31ST							x	x	x	x	x	x	x	x													
FEB 28TH (29)						x	x	x	x	x	x	x	x	x	x												
MAR. 31ST							x	x	x	x	x	x	x	x	x	x	x	x	x	x							
APRIL 30TH							x	x	x	x	x	x	x	x	x												
MAY 31ST							x	x	x	x	x	x	x	x	x												
JUNE 30TH							x	x	x	x	x	x	x	x	x	x	x	x	x	x							
JULY 31ST							x	x	x	x	x	x	x	x	x						x	x					
AUG. 31ST							x	x	x	x	x	x	x	x	x												
SEPT. 30TH							x	x	x	x	x	x	x	x	x												
OCT. 31ST							x	x	x	x	x	x	x	x	x												
NOV. 30TH							x	x	x	x	x	x	x	x	x												
DEC. 31ST							x	x	x	x	x	x	x	x	x	x	x	x	x	x							

- 1 (a) COPY TO C.O. AND EXEC. OFFICE
(b) ROUGH ENTRIES ON DAILY FORM
- 2 (a) ONE COPY O.P. ONE COPY GATE
TO O.D. DAILY: TOTALS IN COM. LOGRA
- 3 (a) M.G.S. DIRECT (b) M.G.S. DIRECT COPY COMDT
(c) M.G.S. DIRECT
- 4 PAY OFFICER ACCOMPANIED
BY NECESSARY RECORDS.
- 5 TO C.O. MARINE BARRACKS.
- 6 ORDERED BY M.G.S. SAME TIME IN FEB. EACH YEAR
- 7 THREE COPIES THROUGH COMDT.
2 P.O. 1 COMDT
- 8 BUREAU NAV. DIRECT
- 9 (a) M.G.S. DIRECT. (b) M.G.S. DIRECT
(c) DUPLICATE TO COMDT (COPY REP. TO JULY. YR) ONE OF THESE
FORMS ONLY.
- 10 (a) M.G.S. THROUGH P.O. (COPY FOR BILL BOOK)
(b) BUREAU NAV. THROUGH COMDT (2 COPIES)
- 11 (a) 2 COPIES M.G.S. DIRECT (b) SMOOTH COPY FOR FILES
(c) 2 " BUREAU NAV. (MODIFIED LATELY)
- 12 TO P.O. FOR OFF. NOT OCCUPYING GOVT. QTRS.
(a) M.G.S. DIRECT
(b) DUPLICATE TO PAY OFF.
- 13 (a) M.G.S. DIRECT
(b) M.G.S. DIRECT
- 14 TO M.G.S. DIRECT 1 COPY

- 15 PATED 9TH MARCH 9 122 SEPT
- 16 (a) QUARTERLY MARKS (b) TO AUDITOR VIA P.O. CONCERNED
(c) MEN WITH LESS THAN 3 MO. TO P.O.
- 17 (a) BUREAU NAV. REPORT
(b) AFTER REPORTS HAVE BEEN ELIMINATED PLACARD CARDS
- 18 (a) TRIPLICATE M.G.S. DIRECT (ALL SIGNED)
(b) M.G.S. DIRECT (c) M.G.S. DIRECT
- 19 (a) MADE OUT BY CHIEF NURSE
(b) TRIPLICATE TO M.G.S. DIRECT (ALL SIGNED)
- 20 (a) THRO. COMDT
(b) 12 APRIL 6 122 OCT. (G.O. #66)
- 21 (a) M.G.S. DIRECT (b) 12 JULY. DUPLICATE M.G.S.
(c) 12 JULY (G.O. #148)
- 22 (a) 12 JULY SENT BY BUREAU NAV. EACH YEAR
(b) M.G.S. DIRECT (DUPLICATE)
- 23 JAN. 122 M.G

CLERICAL PROCEDURE DISCHARGE

EXPIRATION OF ENLISTMENT
SENTENCE S.C.M.
DESERTER I.S.
CHART NO. B.

(1) ENTRY MEDICAL JOURNAL
(2) CLOSE BOARD SLIP
CLOSE HEALTH RECORD
ORDER PAY OFFICER RECORD
ACCOUNTS
ENTRY IN HOSPITAL REGISTER
FORM 7 (C) FORM 1-1
MAKE EFFICIENCY REPORT
(10) CLOSE MUTED REPORT
(11) MAKE FORM 1-B
(12) COMPLETE ENL. RECORD (C) MAKE DISCHARGE
(13) ENTRY IN N.M.H.C. &
(14) COMPLETE DISCHARGE
(15) ENTRY IN NURSE'S POSITION CARD
(16) STATEMENT OF SERVICE
(17) MAKE DESCRIPTION OF EFFECTS
(18) INVENTORY OF EFFECTS
(19) ENDORSE REPORT SURVEY

	1	2	3	4	5	6	7	8	9	10	11	12							
NAVY DUTY	x	x	x		b	x	x	b			x								X ALL CASES
NAVY PATIENT	x	x	x	x	b	x	x	b			x	x							b Hosp. Corps ONLY
MARINE DUTY	x	x		x															
MARINE PATIENT	x	x		x								x							
NURSE DUTY	x	x	x		x				x	x									
NURSE PATIENT	x	x	x		x				x	x									
1 (a) SHORT NOTE																			
(b) USE AS MEMO FOR O.D.																			
2 FORWARD TO DV. M.G.S.																			
3 USE FORM PROVIDED: CERTIFIED COPIES OF DV. ORDER IN CASE OF NURSES.																			
4 (a) CLOSE REGISTER ENTRY.																			
(b) CLOSE FORM "F" & FORWARD TO DV. M.G.S. (C) ENTRY ON ROUGH FORM																			
5 FORWARD TO DV. M.G.S. DIRECT.																			
6 (a) NECESSARY ENTRIES.																			
(b) FORWARD TO DV. NAV. DIRECT																			
7 (a) MAKE SHORT STATEMENT OF REASON & AUTHORITY FOR DISCHARGE. SEE MEMO.																			
(b) IF HAS NO C.S.C. NOT REQUIRED FOR DESERTER.																			

8 (a) ON ROUGH FORM
(b) FORWARD TO DV. M.G.S.

9. RETURN TO NURSE. MAKE COPIES

(b) ROUGH CHECK BOOK

(c) SENT THROUGH C.O. BY CHIEF NURSE

10 (a) TO PAY OFFICER CARRYING ACCOUNTS

11 (a) SEND COPY TO ALL RECEIVING SHIPS

(b) COPY TO MAYOR, HOME-TOWN NEXT TO KIN AND TO DETECTIVE AGENCIES.

(c) USE FORM PROVIDED, MARINE'S EFFECTS TO BE

INVENTORIED AND SENT TO BARRACKS.

12. FORWARD TWO COPIES TO DV. NAV.

MEMO: WHEN PATIENTS NAVY & MARINE CORPS ARE DISCHARGED FOR EX. ENL- DISCHARGE ON MEDICAL JOURNAL, REGISTER AND FORMS "F" & "I" WITH A "T" TO SUPERNUMERARY LIST IF RETAINED AS A PATIENT. OFFICERS ARE FIRST SURVEYED TO A RETIRING BOARD DISCHARGED WITH "T" TO RETIRING BOARD. R.A. UPON THEIR RETURN AND I.S. WHEN ACTUALLY PLACED ON RETIRED LIST.



IN CASE OF DEFECTION GIVE ATTENDANT CIRCUMSTANCES AS FOLLOWS
DISPOSAL OF EFFECTS, ESPECIALLY UNIFORM: SECRET PREPARATIONS
FOR DEFECTION. PROCURING PLAIN CLOTHING: DECLARATIONS TO

COMRADES: A KNOWN DESIRE TO QUIT THE NAVAL SERVICE: TAKING PASSAGE FOR A DISTANT PORT
ESCAPE FROM ARREST AND QUITTING IMMEDIATE VICINITY OF STATION & DUTY: THE COMMISSION OF
AN OFFENSE AND FEAR OF PUNISHMENT THERE FOR
ART. 3634 & 3635 COMPLIED WITH.
EXPIRATION OF ENL. & SENTENCE S.C.M. 1 TO 10 INCL
DESERTER 1 TO 11 INCL. I.S. 1 TO 10 INCL & 12.

DISCHARGE
DEAD
CHART ~ C

x - ALL CASES
a - IF REQUIRED
b - HOSP. CORPS ONLY
c - IF AUTHORIZED

- b-DISPOSE OF IN ACCORDANCE WITH WISHES
OF NEXT OF KIN. MONEY TO S.O. IN CASE OF
SERVICE MEN.
5. - TELEGRAM FOR MEN IN SERVICE. LETTER FOR OTHERS.
6. - STATE FINDINGS.
7. - ORIGINAL 3 COPIES & SHIPPING ORDER TO UNDERTAKER
TO BE MAILED TO CONSIGNEE, ONE COPY IN B/L FILE &
ONE COPY IN PATIENT'S FILE, CASES MARKED "C"
SENT AT GOV'T EXPENSE ONLY ON AUTHORITY OF BUREAU.
8. - NUMBER AS REQUIRED BY REGULATIONS.
9. - TO OFFICE CARRYING ACCTS. CIVILIAN NOT EMPLOYEE 50 +
PER DAY. COLLECT.
10. - ARMY PATIENT INFORM ARMY POST ALSO PENSIONER INFORM

- COMMISSIONER OF PENSIONS

x - ALL CASES.
a - IF REQUIRED.
b - HOSP. CORPS ONLY.

- | | | |
|---|--|--|
| 1. a- OR ADMISSION & DISCHARGE BOOK. | 8. - STATE CIRCUMSTANCES. | 17. - FORM REQUIRED. |
| b- C.O. STAMP. CHECK SICK DAYS. | 9. - NECESSARY ENTRY SHOWING DATE & DISPOSITION. | 18. - FOR MAN & PAPERS. |
| c- STATE DISPOSITION. USE AS MEMO FOR C.D. | 10. - ROUGH COPY FOR MAKING SMOOTH | 19. - TO PAY OFFICER. |
| 2. - IN CASE OF TRANSFER ONLY. | 11. - ROUGH LIST. | 20. - TO PAY OFFICER. |
| 3. - AMBULANCE, RAIL OR OTHERWISE. | 12. a-ROUGH LIST FOR CHECKING. | 21. a-FIRST CLASS TO LOS ANIMAS. |
| 4. a- CLOSE ENTRY. | b- SENT BY CH. NURSE THROUGH C.O. | b- SEND TO BU. NAV. VIA. DESTINATION PATIENT |
| b- CLOSE CARD & FORWARD TO BUREAU. | 13. a- ENTRIES AS REQUIRED | c- IF PATIENT TO OTHER HOSP. |
| c- ROUGH COPY FOR MAKING SMOOTH. | b- ONE FORM ONLY REQUIRED. | 22. a- TRANSPORTATION FROM PAY OFFICER. |
| 5. - TO PAY OFFICERS CARRYING ACCOUNTS | c- ORDER TO PAY OFFICER. | b- WHEN TO INSANE ASYLUM DIRECT. |
| 6. - TWO COPIES TO PAY OFFICER CARRYING ACCOUNTS. | 14. - COPIES FOR PAY OFFICERS & CLAIMS. | 23. - INFORM C.O. MARINE BARRACKS CARRYING |
| 7. - STATE CIRCUMSTANCES. | 15. - TO BUREAU M & S. DIRECT. | PAPERS OF MAN'S TRANSFER. |
| | 16. - STATE PENSION NUMBER. | |

CLERICAL PROCEDURES

HOSPITAL ARRIVALS

CHART - E

a-ENTRY MEDICAL JOURNAL. b-MAKE DORS CARD.
ENTRIES & HEALTH RECORD. b-REGISTER. c-FORM F. d-FORM I.
RATION NOTICE
ENDORSE ORDERS
DISCHARGE REPORT
LETTER BUREAU M. & S.
MAKE MUSTER CARD
ENTRY ROSTER REPORT (M. & S. NAVY)
ENTRY a-SHORT THREE LIST b-COURT MARTIAL CHECKING LIST
SEND PAY ACCOUNTS
COPY ORDERS
MAKE CARD FOR COMPT FILES
REQUEST QUARTERS
ENTRY a-NURSES MEMO. b-CH. NURSE SEND IN F-SLIP.
LETTER COMMISSIONER PENSIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
NAVY DUTY	x			a				x	b	a	x	b						
NAVY PATIENT	x	x			a			x	b	a	x	b						
NAVY PATIENT RET.	x	x	x															
MARINE DUTY	x	x			a													
MARINE PATIENT	x	x			a													
MARINE PATIENT RET.	x	x	x															
OFFICER DUTY	x			x				x					a	x	a			
OFFICER PATIENT NAVY	x	x	x	a	a		x											
OFFICER PATIENT M.C.	x	x	x	a	a		x											
OFFICER PATIENT RET.	x	x	x			x	x											
NURSE DUTY	x			x									a			x		
NURSE PATIENT	x	x														x		
BENEFICIARY PATIENT	x	x																
SUPERNUMERARY EX. SERV.	x	x				x												
NAVAL AUX. SERVICE	x	x		a			x		a	x								
APPLICANT FOR ENLISTMENT	x	x			x													
PENSIONER	x	x														x		
ARMY PATIENT	x	x			x													
CIVILIAN EMPLOYEE	x	x			x													
CIVILIAN NOT EMPLOYEE	x	x			x													

x - ALL CASES

a - IF (AS) REQUIRED

b - HOSPITAL CORPS ONLY

1-a. NOT REQUIRED FOR PATIENTS. PREFERABLY ADM. & DISCHARGE BOOK USED.

b. WHERE DE-SAUSSURE OR SIMILAR SYSTEM IS USED.

2-a. PLACE: DATE OF ADMISSION & R.A.(a).

b. REGISTER OF PATIENTS

c. MAKE "F" CARD

d. ROUGH FORM "I" FROM WHICH SMOOTH IS MADE.

3 - TO PAY OFFICER CARRYING ACCOUNTS

4 - PLACE AND DATE OF REPORTING: RETURN

5 - ACCORDANCE G.O. # 100 OR 231

6 - SHORT STATEMENT CIRCUMSTANCES VIA. COMD T

7 - SHORT STATEMENT CIRCUMSTANCES VIA. COMD T

8 - FOR MUSTER ROLL & PERMANENT LIST OF OFFICERS.

9 - AS REQUIRED ON THIS FORM

10-a. THREE MONTHS OR LESS TO DO SO THAT DATE OF EXPIRATION OF ENLISTMENT MAY NOT BE OVER LOOKED

b. GET FROM SERVICE RECORD UPON RECEIPT. PAY OFFICER CHECKS ONCE MONTHLY

11 - AS REQUIRED ON THIS FORM

12 - ONE CARD TO M. & S. DIRECT

13 - FOR TAKING UP ACCOUNTS & SUBMITTING CLAIMS.

14 - NAME, RATE, LOCAL ADDRESS, PHONE & DUTY

15 - IF PUBLIC QUARTERS ARE NOT AVAILABLE

16 - a. ROUGH MEMO FOR CHECKING PURPOSES.

b. CH. NURSE AFTER APPROVAL BY C O SENDS DIRECT

17 - NAME & PENSION NUMBER.

MISCELLANEOUS

RETURNS

WHEN
NECESSARY

CHART

Nº F

(a) OPEN PURCHASE REQUISITION M.E.S.
(b) VOUCHER M.E.S. FORM 54.54
(a) SPECIAL EMERGENCY VOUCHER M.E.S.
(b) REQUISITION FOR MED. SUPPLIES M.E.S. 6462
(a) PROVISION REQUISITION S.E.A. FORM 30
(b) REQUEST FOR TRANSFER OF LABOR S.E.A. FORM 126A
(a) REQUEST FOR BLANK FORMS M.E.S. FORM 46
(b) TRANSFER ON MED. PROPERTY M.E.S. FORM 10
(a) REQUEST FOR MED. SURVEY D.E. DA.
(b) EXAM. REPORT N. M.E.S. H.C. N. 113
(a) NAV. SLIP #2
(b) FORM 1-B
(a) FORM X ROUGH
(b) FORM #2 IDENTIFICATION CHART NAV.
(a) TELEGRAMS: NOTICE OF ABSENTEE
(b) WITH COMDT. TRANSFER TO F.N.R.
(a) FORM K. COPIES IN ACCORDANCE
(b) REPORT OF CASUALTY REPORT
(a) MEMO OF RECEIPT OF STORES, ETC. TO OFF. OF DAY
(b) DECK COURT JOURNAL
(a) SUMMARY COURT FORM SPECIAL
(b) ENTRY ON SERVICE RECORD
(a) JUDICIAL RECORD CHECKAGE SLIP TO PAY OFFICER
(b) 35 F. 35 A. 35 B. 35 C. 35 D. 35 E. 35 F. 35 G. 35 H. 35 I. 35 J. 35 K. 35 L. 35 M. 35 N. 35 O. 35 P. 35 Q. 35 R. 35 S. 35 T. 35 U. 35 V. 35 W. 35 X. 35 Y. 35 Z. 35 AA. 35 AB. 35 AC. 35 AD. 35 AE. 35 AF. 35 AG. 35 AH. 35 AI. 35 AJ. 35 AK. 35 AL. 35 AM. 35 AN. 35 AO. 35 AP. 35 AQ. 35 AR. 35 AS. 35 AT. 35 AU. 35 AV. 35 AW. 35 AX. 35 AY. 35 AZ. 35 BA. 35 BB. 35 BC. 35 BD. 35 BE. 35 BF. 35 BG. 35 BH. 35 BI. 35 BJ. 35 BK. 35 BL. 35 BM. 35 BN. 35 BO. 35 BP. 35 BQ. 35 BR. 35 BS. 35 BT. 35 BU. 35 BV. 35 BW. 35 BX. 35 BY. 35 BZ. 35 CA. 35 CB. 35 CC. 35 CD. 35 CE. 35 CF. 35 CG. 35 CH. 35 CI. 35 CJ. 35 CK. 35 CL. 35 CM. 35 CN. 35 CO. 35 CP. 35 CQ. 35 CR. 35 CS. 35 CT. 35 CU. 35 CV. 35 CW. 35 CX. 35 CY. 35 CZ. 35 DA. 35 DB. 35 DC. 35 DD. 35 DE. 35 DF. 35 DG. 35 DH. 35 DI. 35 DJ. 35 DK. 35 DL. 35 DM. 35 DN. 35 DO. 35 DP. 35 DQ. 35 DR. 35 DS. 35 DT. 35 DU. 35 DV. 35 DW. 35 DX. 35 DY. 35 DZ. 35 EA. 35 EB. 35 EC. 35 ED. 35 EE. 35 EF. 35 EG. 35 EH. 35 EI. 35 EJ. 35 EK. 35 EL. 35 EM. 35 EN. 35 EO. 35 EP. 35 EQ. 35 ER. 35 ES. 35 ET. 35 EU. 35 EV. 35 EW. 35 EX. 35 EY. 35 EZ. 35 FA. 35 FB. 35 FC. 35 FD. 35 FE. 35 FF. 35 FG. 35 FH. 35 FI. 35 FJ. 35 FK. 35 FL. 35 FM. 35 FN. 35 FO. 35 FP. 35 FQ. 35 FR. 35 FS. 35 FT. 35 FU. 35 FV. 35 FW. 35 FX. 35 FY. 35 FZ. 35 GA. 35 GB. 35 GC. 35 GD. 35 GE. 35 GF. 35 GH. 35 GI. 35 GJ. 35 GK. 35 GL. 35 GM. 35 GN. 35 GO. 35 GP. 35 GQ. 35 GR. 35 GS. 35 GT. 35 GU. 35 GV. 35 GW. 35 GX. 35 GY. 35 GZ. 35 HA. 35 HB. 35 HC. 35 HD. 35 HE. 35 HF. 35 HG. 35 HI. 35 HJ. 35 HK. 35 HL. 35 HM. 35 HN. 35 HO. 35 HP. 35 HQ. 35 HR. 35 HS. 35 HT. 35 HU. 35 HV. 35 HW. 35 HX. 35 HY. 35 HZ. 35 IA. 35 IB. 35 IC. 35 ID. 35 IE. 35 IF. 35 IG. 35 IH. 35 II. 35 IJ. 35 IK. 35 IL. 35 IM. 35 IN. 35 IO. 35 IP. 35 IQ. 35 IR. 35 IS. 35 IT. 35 IU. 35 IV. 35 IW. 35 IX. 35 IY. 35 IZ. 35 JA. 35 JB. 35 JC. 35 JD. 35 JE. 35 JF. 35 JG. 35 JH. 35 JI. 35 JJ. 35 JK. 35 JL. 35 JM. 35 JN. 35 JO. 35 JP. 35 JQ. 35 JR. 35 JS. 35 JT. 35 JU. 35 JV. 35 JW. 35 JX. 35 JY. 35 JZ. 35 KA. 35 KB. 35 KC. 35 KD. 35 KE. 35 KF. 35 KH. 35 KI. 35 KJ. 35 KK. 35 KL. 35 KM. 35 KN. 35 KO. 35 KP. 35 KQ. 35 KR. 35 KS. 35 KT. 35 KU. 35 KV. 35 KW. 35 KX. 35 KY. 35 KZ. 35 LA. 35 LB. 35 LC. 35 LD. 35 LE. 35 LF. 35 LG. 35 LH. 35 LI. 35 LJ. 35 LK. 35 LL. 35 LM. 35 LN. 35 LO. 35 LP. 35 LQ. 35 LR. 35 LS. 35 LT. 35 LU. 35 LV. 35 LW. 35 LX. 35 LY. 35 LZ. 35 MA. 35 MB. 35 MC. 35 MD. 35 ME. 35 MF. 35 MG. 35 MH. 35 MI. 35 MJ. 35 MK. 35 ML. 35 MN. 35 MO. 35 MP. 35 MQ. 35 MR. 35 MS. 35 MT. 35 MU. 35 MV. 35 MW. 35 MX. 35 MY. 35 MZ. 35 NA. 35 NB. 35 NC. 35 ND. 35 NE. 35 NF. 35 NG. 35 NH. 35 NI. 35 NJ. 35 NK. 35 NL. 35 NM. 35 NN. 35 NO. 35 NP. 35 NQ. 35 NR. 35 NS. 35 NT. 35 NU. 35 NV. 35 NW. 35 NX. 35 NY. 35 NZ. 35 OA. 35 OB. 35 OC. 35 OD. 35 OE. 35 OF. 35 OG. 35 OH. 35 OI. 35 OJ. 35 OK. 35 OL. 35 OM. 35 ON. 35 OO. 35 OP. 35 OQ. 35 OR. 35 OS. 35 OT. 35 OU. 35 OV. 35 OW. 35 OX. 35 OY. 35 OZ. 35 PA. 35 PB. 35 PC. 35 PD. 35 PE. 35 PF. 35 PG. 35 PH. 35 PI. 35 PJ. 35 PK. 35 PL. 35 PM. 35 PN. 35 PO. 35 PP. 35 PQ. 35 PR. 35 PS. 35 PT. 35 PU. 35 PV. 35 PW. 35 PX. 35 PY. 35 PZ. 35 QA. 35 QB. 35 QC. 35 QD. 35 QE. 35 QF. 35 QG. 35 QH. 35 QI. 35 QJ. 35 QK. 35 QL. 35 QM. 35 QN. 35 QO. 35 QP. 35 QQ. 35 QR. 35 QS. 35 QT. 35 QU. 35 QV. 35 QW. 35 QX. 35 QY. 35 QZ. 35 RA. 35 RB. 35 RC. 35 RD. 35 RE. 35 RF. 35 RG. 35 RH. 35 RI. 35 RJ. 35 RK. 35 RL. 35 RM. 35 RN. 35 RO. 35 RP. 35 RQ. 35 RR. 35 RS. 35 RT. 35 RU. 35 RV. 35 RW. 35 RX. 35 RY. 35 RZ. 35 SA. 35 SB. 35 SC. 35 SD. 35 SE. 35 SF. 35 SG. 35 SH. 35 SI. 35 SJ. 35 SK. 35 SL. 35 SM. 35 SN. 35 SO. 35 SP. 35 SQ. 35 SR. 35 SS. 35 ST. 35 SU. 35 SV. 35 SW. 35 SX. 35 SY. 35 SZ. 35 TA. 35 TB. 35 TC. 35 TD. 35 TE. 35 TF. 35 TG. 35 TH. 35 TI. 35 TJ. 35 TK. 35 TL. 35 TM. 35 TN. 35 TO. 35 TP. 35 TQ. 35 TR. 35 TS. 35 TU. 35 TV. 35 TW. 35 TX. 35 TY. 35 TZ. 35 UA. 35 UB. 35 UC. 35 UD. 35 UE. 35 UF. 35 UG. 35 UH. 35 UI. 35 UJ. 35 UK. 35 UL. 35 UM. 35 UN. 35 UO. 35 UP. 35 UQ. 35 UR. 35 US. 35 UT. 35 UY. 35 UZ. 35 VA. 35 VB. 35 VC. 35 VD. 35 VE. 35 VF. 35 VG. 35 VH. 35 VI. 35 VJ. 35 VK. 35 VL. 35 VM. 35 VN. 35 VO. 35 VP. 35 VQ. 35 VR. 35 VS. 35 VT. 35 VU. 35 VV. 35 VW. 35 VX. 35 VY. 35 VZ. 35 WA. 35 WB. 35 WC. 35 WD. 35 WE. 35 WF. 35 WG. 35 WH. 35 WI. 35 WJ. 35 WK. 35 WL. 35 WM. 35 WN. 35 WO. 35 WP. 35 WQ. 35 WR. 35 WS. 35 WT. 35 WY. 35 WZ. 35 XA. 35 XB. 35 XC. 35 XD. 35 XE. 35 XF. 35 XG. 35 XH. 35 XI. 35 XJ. 35 XK. 35 XL. 35 XM. 35 XN. 35 XO. 35 XP. 35 XQ. 35 XR. 35 XS. 35 XT. 35 XU. 35 XV. 35 XW. 35 XX. 35 XY. 35 XZ. 35 YA. 35 YB. 35 YC. 35 YD. 35 YE. 35 YF. 35 YG. 35 YH. 35 YI. 35 YJ. 35 YK. 35 YL. 35 YM. 35 YN. 35 YO. 35 YP. 35 YQ. 35 YR. 35 YS. 35 YT. 35 YU. 35 YV. 35 YW. 35 YX. 35 YZ. 35 ZA. 35 ZB. 35 ZC. 35 ZD. 35 ZE. 35 ZF. 35 ZG. 35 ZH. 35 ZI. 35 ZJ. 35 ZK. 35 ZL. 35 ZM. 35 ZN. 35 ZO. 35 ZP. 35 ZQ. 35 ZR. 35 ZS. 35 ZT. 35 ZU. 35 ZV. 35 ZW. 35 ZX. 35 ZY. 35 ZZ.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	(a) 5 COPIES TO M.E.S. VIA COMDT IF REQUIRED (b) 6 " DISBURSING OFFICER VIA PURCHASING OFFICER																		
2	(a) 6 COPIES TO BUREAU S.E.A. VIA BUREAU OF MEDICINE & SURGERY (b) 4 " " SUPPLY DEPOT DIRECT, EXCEPT AS NOTED IN NEW SUPPLY TABLE																		
3	(a) 12 COPIES TO SUPPLY OFFICER (b) 3 " "																		
4	(a) 3 COPIES TO SUPPLY OFFICER (b) 3 " "																		
5	(a) ONE COPY TO MED. SUPPLY DEPOT (DIRECT) (b) ONE COPY TO DIR. NAV. (DIRECT) (c) " " S.E.A. DIRECT																		
6	(a) TWO COPIES TO BUR. M.E.S. AFTER COMPLETION (b) THREE " ONE FOR EACH MED. OFFICER CONCERNED & ONE TO BUR. M.E.S.																		
7	(a) ONE COPY TO COMDT. (b) TWO COPIES " M.E.S. EXTRA COPY IN CASE OF OFFICER OR MARINE																		
8	(a) ONE COPY TO C.O. HAVING MAN'S ACCOUNTS ONE TO BUREAU M.E.S. (b) " " ACCOMPANIES EXAM. REPORT IN CASE P.M. 1ST CL. OR C.P.M.																		
9	(a) TO BUREAU NAV. UPON TRANSFER - DISCHARGE - CHANGE OF RATE OF ENLISTED MAN. (b) " " " IN CASE OF C.O. OR MAN ON BOARD MORE THAN THREE MONTHS.																		
10	(a) UPON ENLISTMENT OR EXAM. FOR THE ENLISTMENT OF ANY APPLICANT RETAIN. (b) " " BUREAU NAV.																		
11	(a) SEE INSTRUCTIONS ON FORM. (b) COPIES TO BUR. NAV. TO MAN'S HOME ADDRESS - TO REC. SHIP ETC. (c) ONE COPY TO BUR. NAV.																		
12	(a) TELEGRAMS ARE SENT TO YARD TELEGRAPH OFFICE USUALLY. COPIES ARE MADE FOR COMDT - CONFIRMATION - ETC.																		
13	(a) UPON THE OCCURRENCE OF ANY SERIOUS CASUALTY, TO M.E.S. (b) " " " AN EPIDEMIC, TO BUR. M.E.S.																		
14	(a) ALL RECEIPTS SPECIAL HAPPENINGS - DEATHS - COURTS - ETC MUST BE ENTERED IN MED. JOURNAL C. PH. M. PREPARES MEMO FOR D.O. INFORMATION																		
15	(a) AFTER TRIAL OF ENLISTED MAN BY DECK COURT TO JUDGE ADVOCATE GEN. AFTER ENTRY BY PAY OFFICER (b) " " BY SUMMARY COURT TO JUDGE ADVOCATE GEN. AFTER ENTRY BY PAY OFFICER APPROVAL BY CONVENING AUTHORITY																		
16	(a) AFTER CHECKING IS MADE BY PAY OFFICER ENTER SENTENCES IN SERVICE RECORD. (b) TO PAY OFFICER WITH COURT PROCEEDINGS																		
17	(a) ENTER ALL ORDERS TO PAY OFFICERS IN APPROPRIATE PLACES IN FORM 35 S.E.A. BOOK																		
18																			

CONTRIBUTIONS.

Save your copy of the SUPPLEMENT and use it for reference. All information contained in its pages may not be of immediate value but may be just what you need at a later time. Each number contains information not found in the "Handy Book."

The contributions desired are articles dealing with measures and methods of treating the sick and injured, teaching and training, special duties, suggestions for improvement in any line of Hospital Corps work; pictures illustrating Hospital Corps activities; the corps on detached duty, on foreign stations, at training schools, landing parties, transportation of sick and injured, surgical X-ray and laboratory procedure, tropical duties, war pictures illustrating the work of the Hospital Corps; in short, any pictures which will be of interest and instruction to the corps.

The editor has been gratified by the interest already taken by hospital corpsmen and others who have submitted articles and pictures for publication in the SUPPLEMENT. It is hoped that the interest will continue and that hospital corpsmen, doctors, nurses, dental officers, will all remember that they can talk to one another in the pages of this publication in a way which will be of benefit to all.

Several contributions have been received which, because of limited space, could not be published in this number.

The SUPPLEMENT will publish only material that is of special interest and benefit to the Hospital Corps, the editor reserving the right to turn over to other Navy magazines or papers material which is of interest to the Navy at large, rather than to the Hospital Corps in particular. Owing to the uncertainty of mail transmission the editor does not assume responsibility for the return of pictures, articles, etc., contributed.

Endeavor will be made to answer through these columns any inquiries submitted by hospital corpsmen that are of general interest to the corps. Strictly personal inquiries will not be answered. Unsigned letters will not be considered.

Address all communications to:

EDITOR OF THE SUPPLEMENT,
*Bureau of Medicine and Surgery,
Navy Department,
Washington, D. C.*

